A Taste of Farming: Forestry in Virginia

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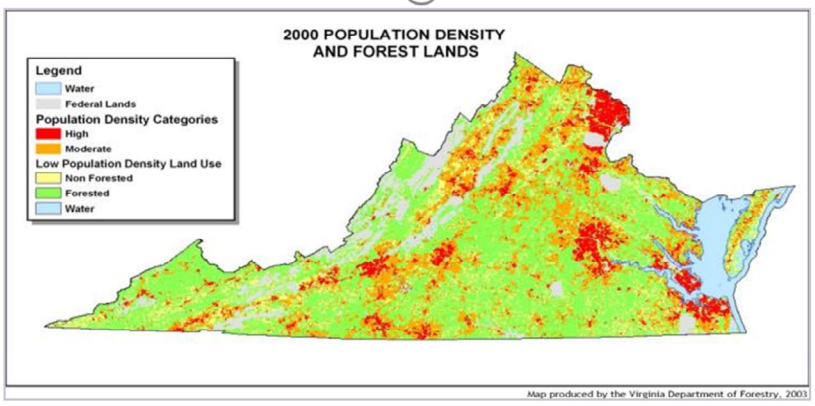

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Good Afternoon, I am Neil Clark and have been the Extension Forestry Agent in eastern Virginia since 2006 and had done a stint as a procurement forestry between my undergraduate and graduate degrees. Today I just want to present an overview of forestry as it may pertain to a beginning farming operation in Virginia. Since Virginia is 62% forest, most rural land parcels contain some amount of forest cover which may require varying degrees of management, from simple maintenance to accomplishing business objectives.

What Do You Have

- Acreage
- Site Productivity and Conditions
- Age and Species Composition
- Legal Constraints
- Access To Markets
- Willingness for DIY – Niche Markets - NTFPs

The first step in determining what can be done, it determining your starting point. What do you have? This can be analyzed in terms of acreage, site productivity and conditions, age and species composition of current forest, legal constraints, access to markets, and your willingness to put in some Do It Yourself work looking at niche markets, referred to by researchers as non-timber forest products or NTFPs.

Acreage

- The amount of forest land that you have impacts **its marketability** which also can impact **tax implications** in some localities
- Marketability generally impacts the types of management practices that you can practically **implement**
- For the purposes of the State Land Evaluation Advisory Council (SLEAC) which advises localities on land use valuation. Land managed for production forestry must be **minimum of twenty acres** and composed at least 40% normal **stocking** of **marketable forest trees**. To be qualified the land must be growing a commercial forest crop that is physically accessible for harvesting when mature

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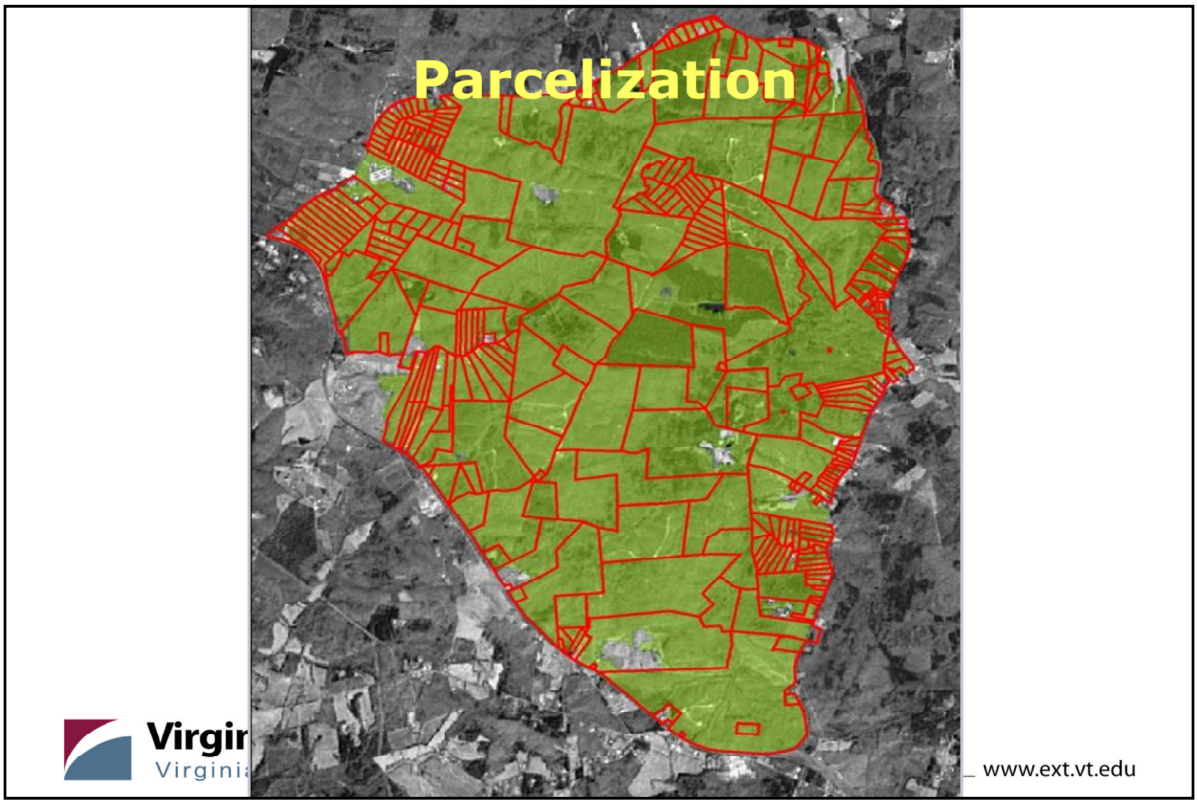


This is an example of parcelization, as the population of Virginia continues to increase, in most areas ownership parcels continue to be divided up into smaller and smaller properties.

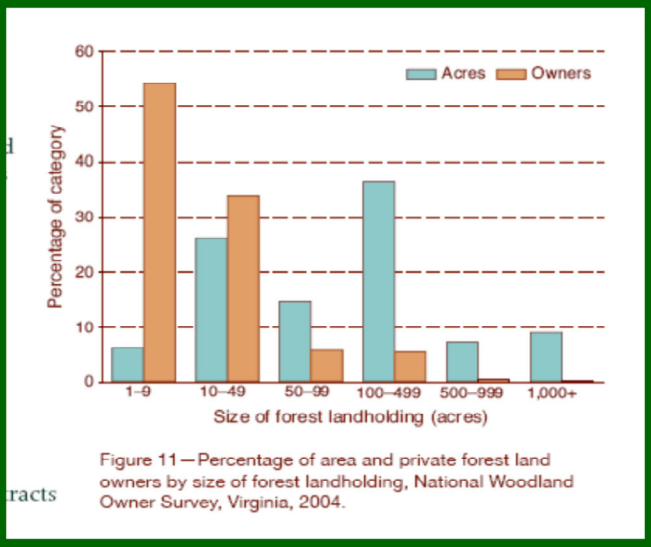


Figure 11—Percentage of area and private forest land owners by size of forest landholding, National Woodland Owner Survey, Virginia, 2004.

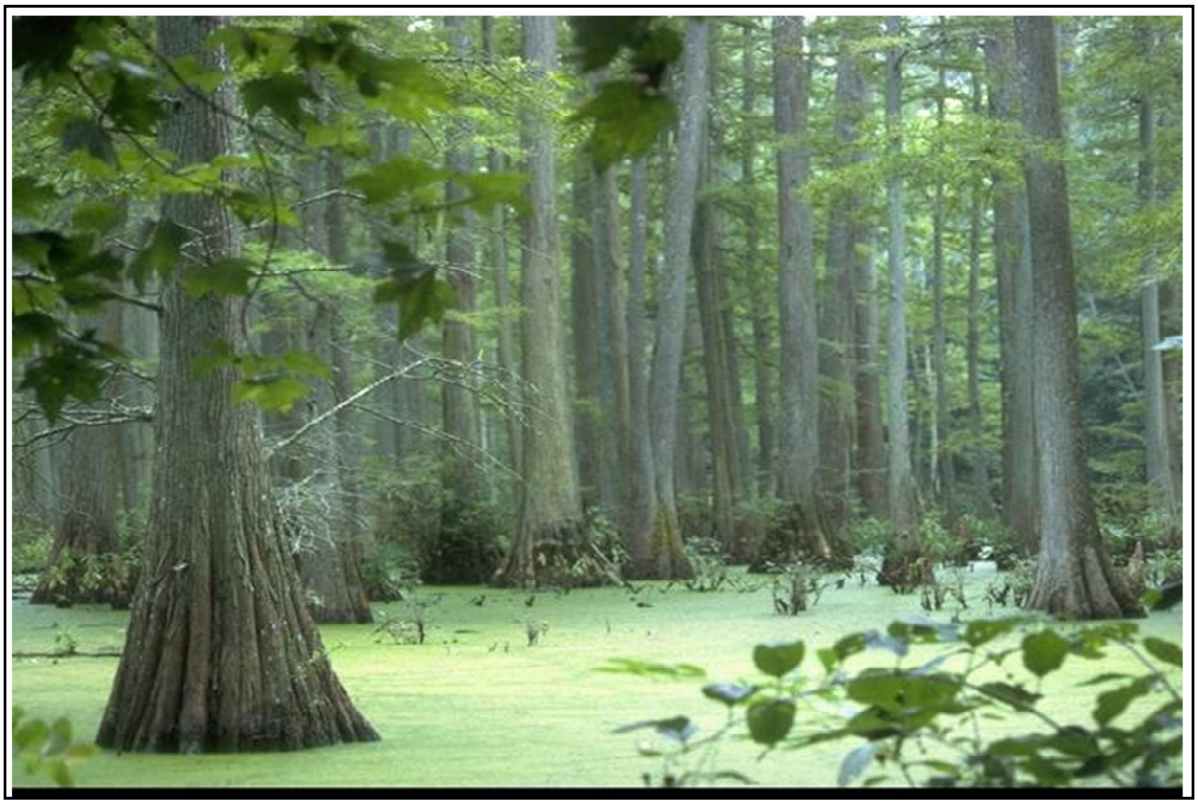
This is displayed graphically here where you will se the number of people who own less than 50 acres is close to 90%, while the number of owners of 50 acres or more is just over 10 percent.

The cost of insurance, labor challenges, and market specifications have shifted many loggers to capital-intensive operations with large equipment that has a fairly large footprint and cost to move between tracts. So a certain volume or value of timber must be present just to cover these fixed costs before profits are realized.

Site Productivity and Conditions

- Soil type and amount – some areas not enough soil for productivity or if too wet dry
- Water availability or excess:
  - coastal beach sand
  - rocky outcrops
  - Swamps
  - Pocosins
  - tidal marshes
- Access due to:
  - property boundaries
  - physical barriers
  - water features
  - too wet soil
  - steep slopes

The soil and lay of the land combine to determine site productivity. From the alkaline soils and cooler temperatures of the mountains, to the red clays of Virginia's piedmont, to the droughty acidic sands of the coastal plain each of these areas favor or discourage growth of different tree species



Too wet for some species

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Access

Too steep for harvesting or stable soils

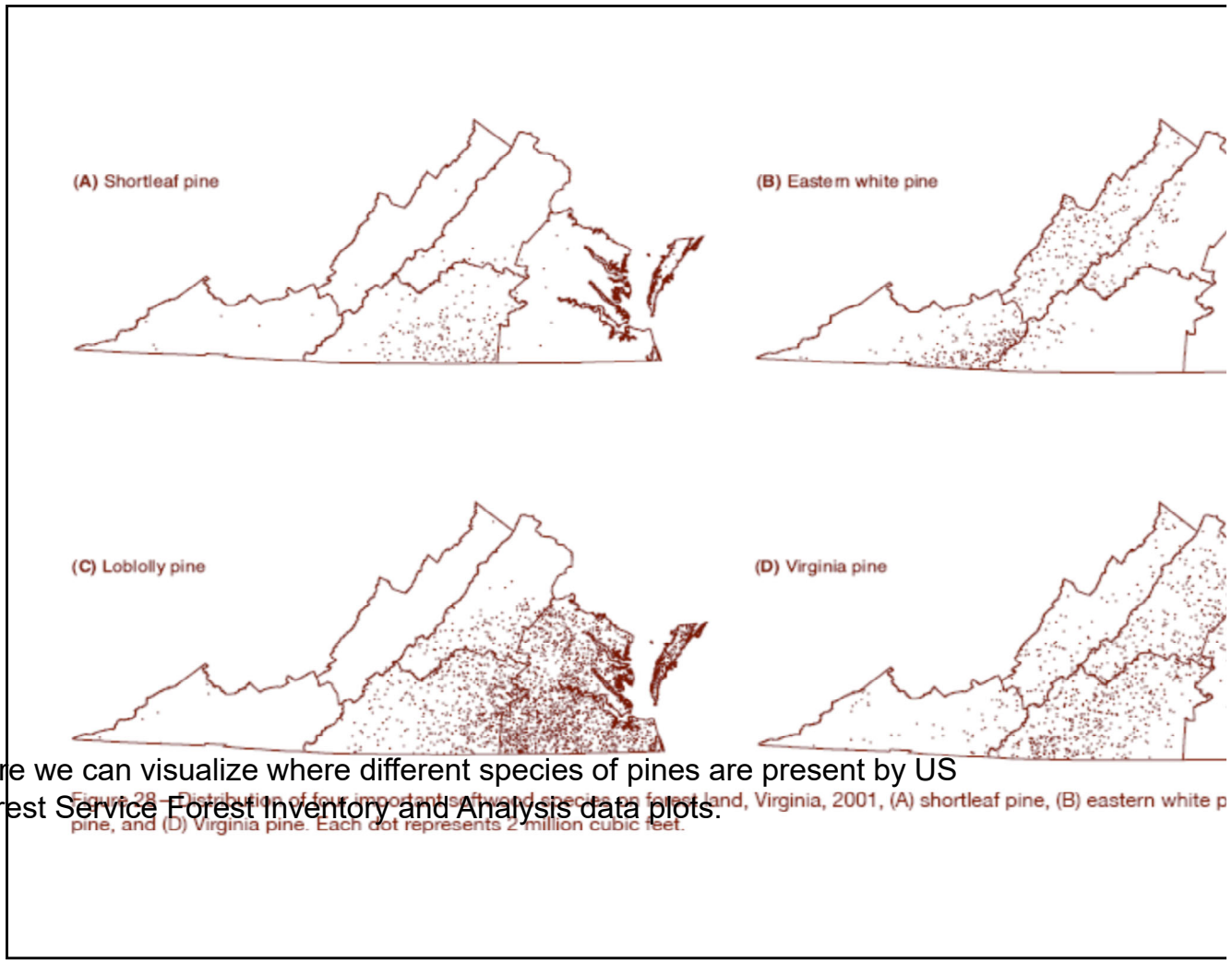
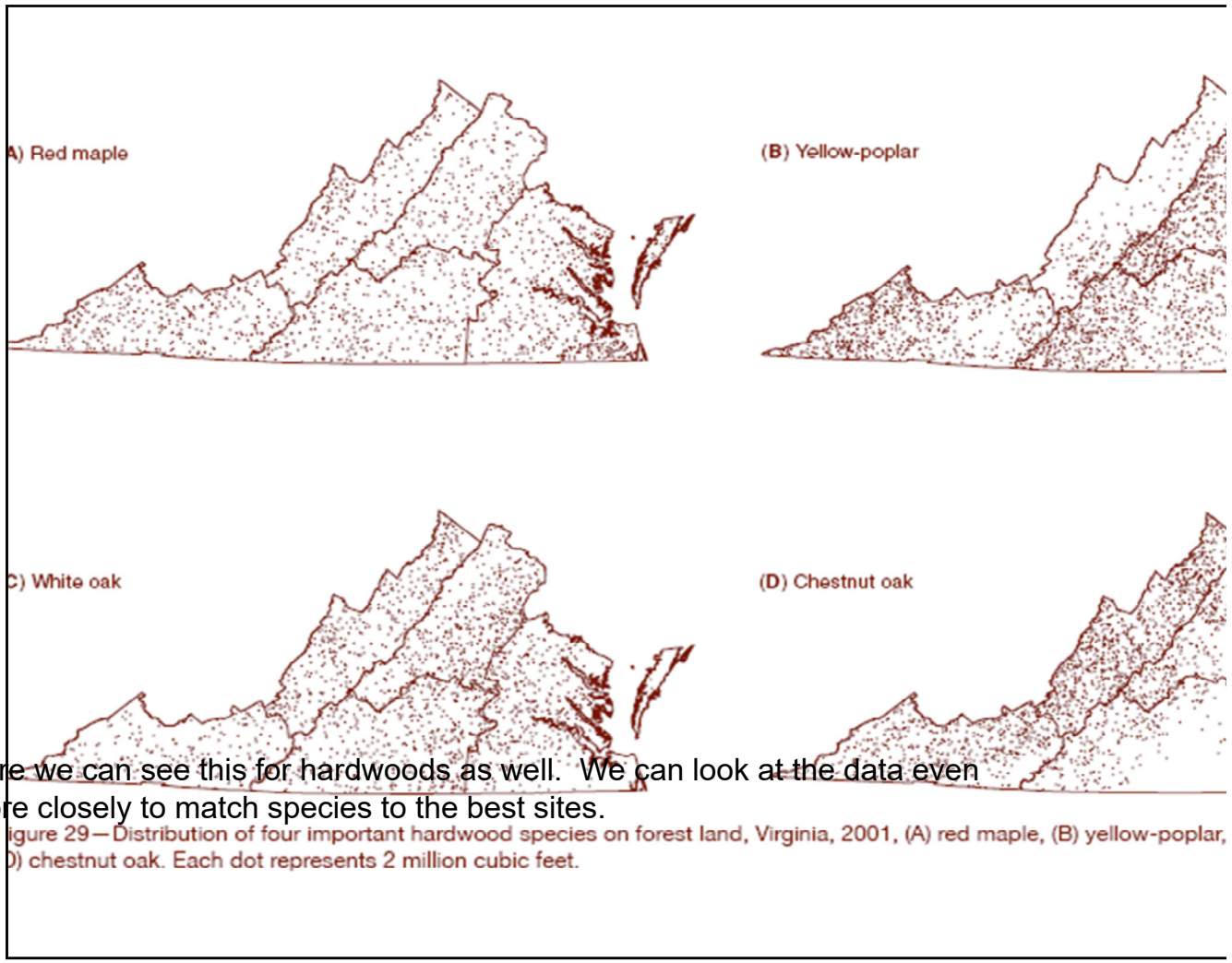


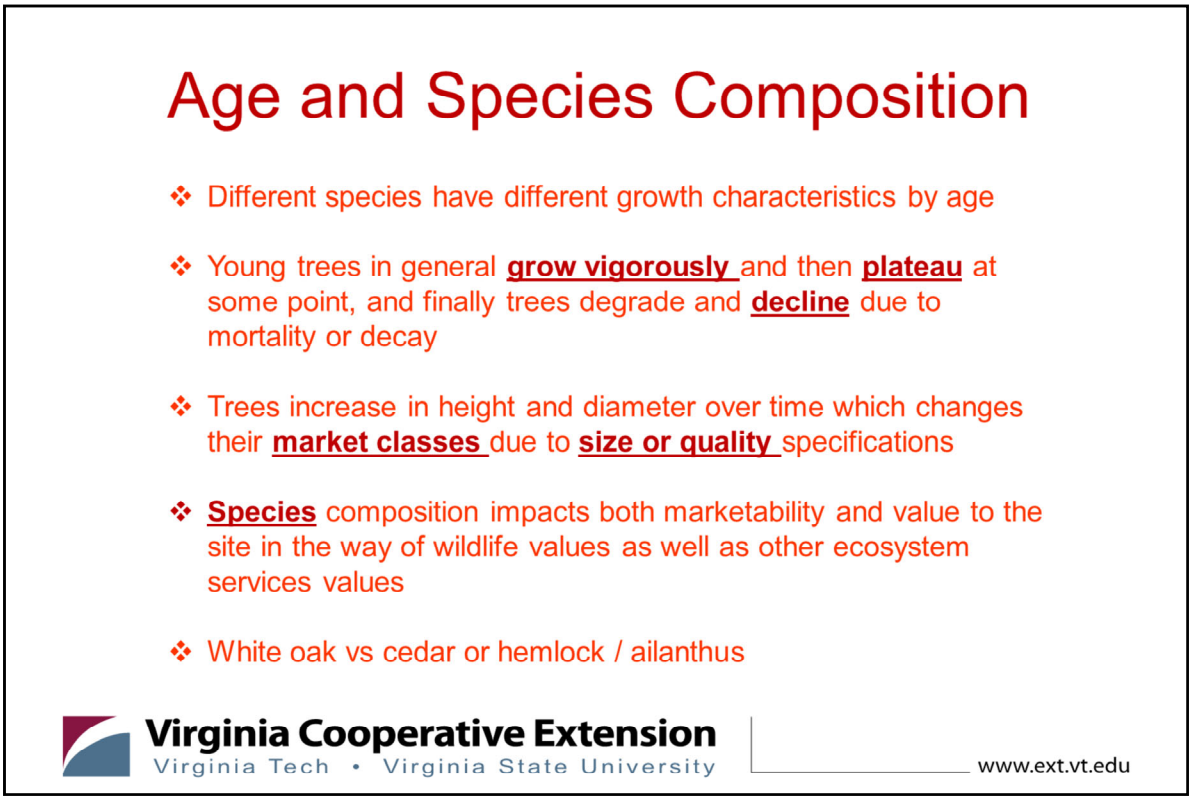
Figure 28.—Distribution of four important softwood species on forest land, Virginia, 2001, (A) shortleaf pine, (B) eastern white pine, and (D) Virginia pine. Each dot represents 2 million cubic feet.

Here we can visualize where different species of pines are present by US Forest Service Forest Inventory and Analysis data plots.



Here we can see this for hardwoods as well. We can look at the data even more closely to match species to the best sites.

igure 29—Distribution of four important hardwood species on forest land, Virginia, 2001, (A) red maple, (B) yellow-poplar, D) chestnut oak. Each dot represents 2 million cubic feet.



Next there is the age and species composition of your stand which is largely determined by the land use history of your property. Virginia is blessed by adequate rainfall, so in most cases any abandoned land will revert to forests by the fortune of wind and animal dispersed seeds, or from sprouts of trees previously cut. Sadly previous harvest practices have left much of Virginia's hardwood forests in a high-graded state.

High-grading is a result of "cut the best, leave the rest". It is likened to growing a garden and continuing to harvest the most productive plants, leaving the poorer plants and weed species to automatically produce future crops. In that case the garden will become less and less valuable over time. A crooked tree will never straighten, an undesireable species will never transform into a desirable one, and inferior genetics will occupy the space. In the western part of the state, eastern red cedar proliferates down every fence line due to bird dispersal combined with difficult to maintain areas. Having some cedar is great for wildlife and limited aesthetics, long-term soil holding. However, it is not a quick growing tree, and the market for the wood is limited.

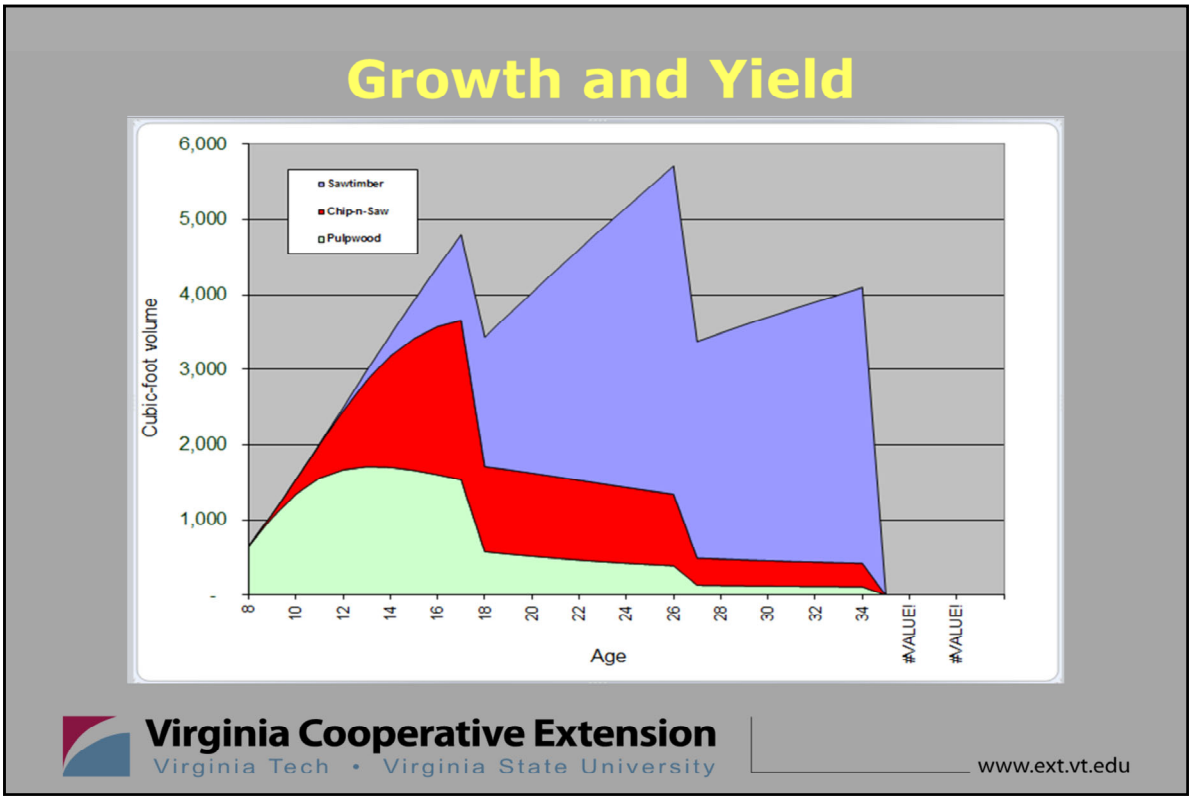
Similarly, sweetgum is the most prolific natural seeder in the coastal plain and likewise limited market value, red maple likely fills this role in mixed

hardwoods of the piedmont.

Active management is typically needed to foster productive forests for future marketability.

This photo shows open fields or abandoned pastures that will naturally seed, but not always with desirable stocking levels or species mix that meets your goals.

This is a mixed hardwood forest that has been managed and improved for future value.



Most trees in Virginia grow in even aged groups begun by some sort of disturbance be it a harvest, storm event, or fire. These trees compete for sunlight with the tallest of the species occupying the dominant spaces in the canopy. Trees suddenly "jump" in value as they reach market specification sizes. Likewise partial harvests release sunlight and other resources which cause remaining trees to grow more rapidly and in most cases in a healthier condition.

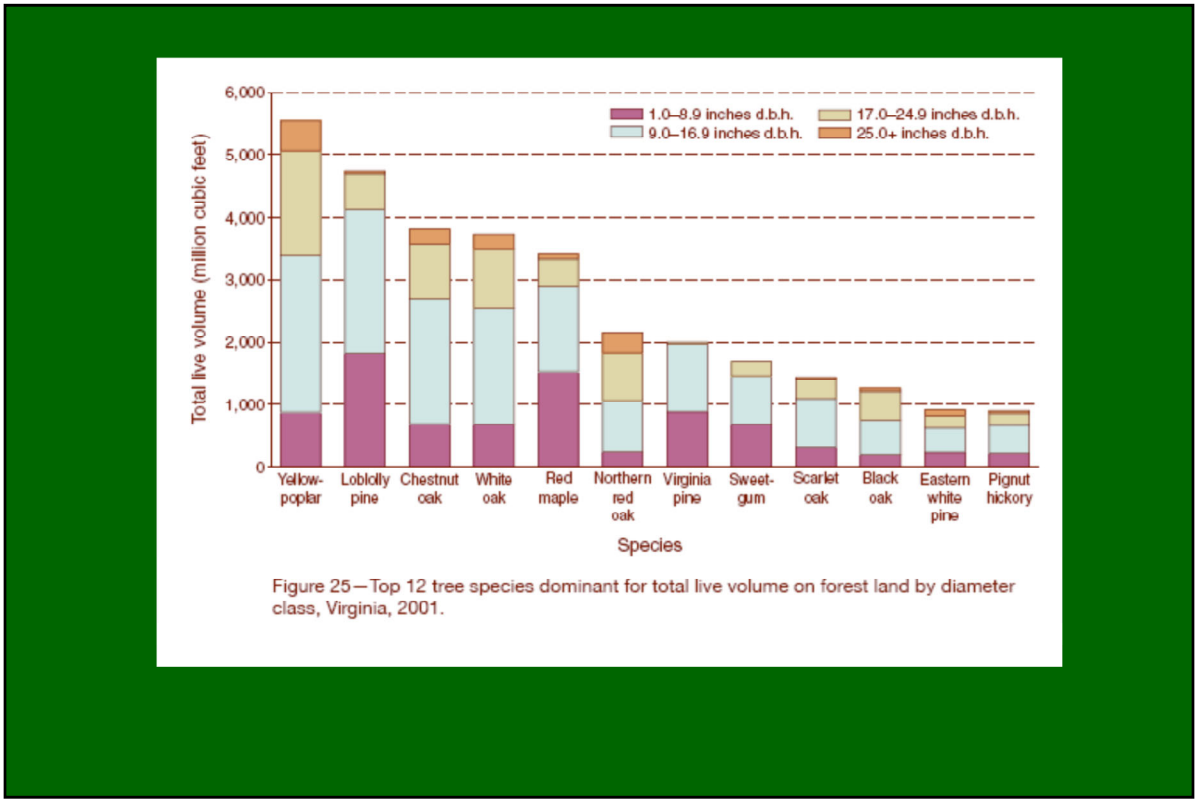
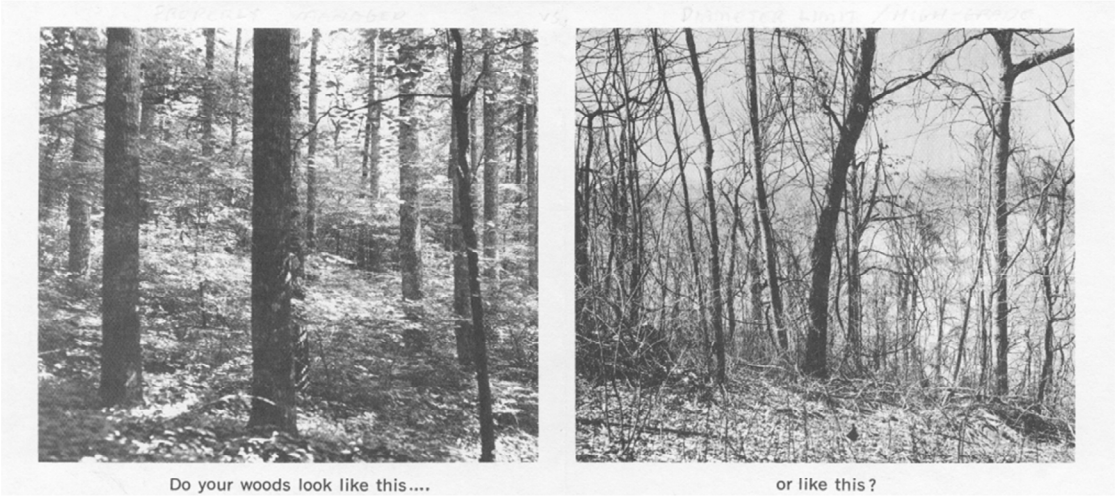


Figure 25—Top 12 tree species dominant for total live volume on forest land by diameter class, Virginia, 2001.

This graph shows the volume of timber by species which allows forest managers and businesses to assess change over time.

Avoid High-grading



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This photo series demonstrates the method and how long it takes to restore a productive forest from a previously high-graded state to a productive forest in terms of value.

Stand prior to harvest in 1927

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This is what the Pennsylvania stand looked like in 1927 before harvest. Hard to tell a lot from this picture, there is a lot of understory and that is not necessarily a bad thing. There we not many deer in 1927 so quite a bit of natural regeneration.

Merchantable sawtimber removed during Winter 1927

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The merchantable timber was cut – the large / straight / sound trees of desirable species. Often this is where folks stop resulting in 100 years of wasted productivity and less desirable situation depending on goals.

Remaining trees harvested for chemical wood soon after…

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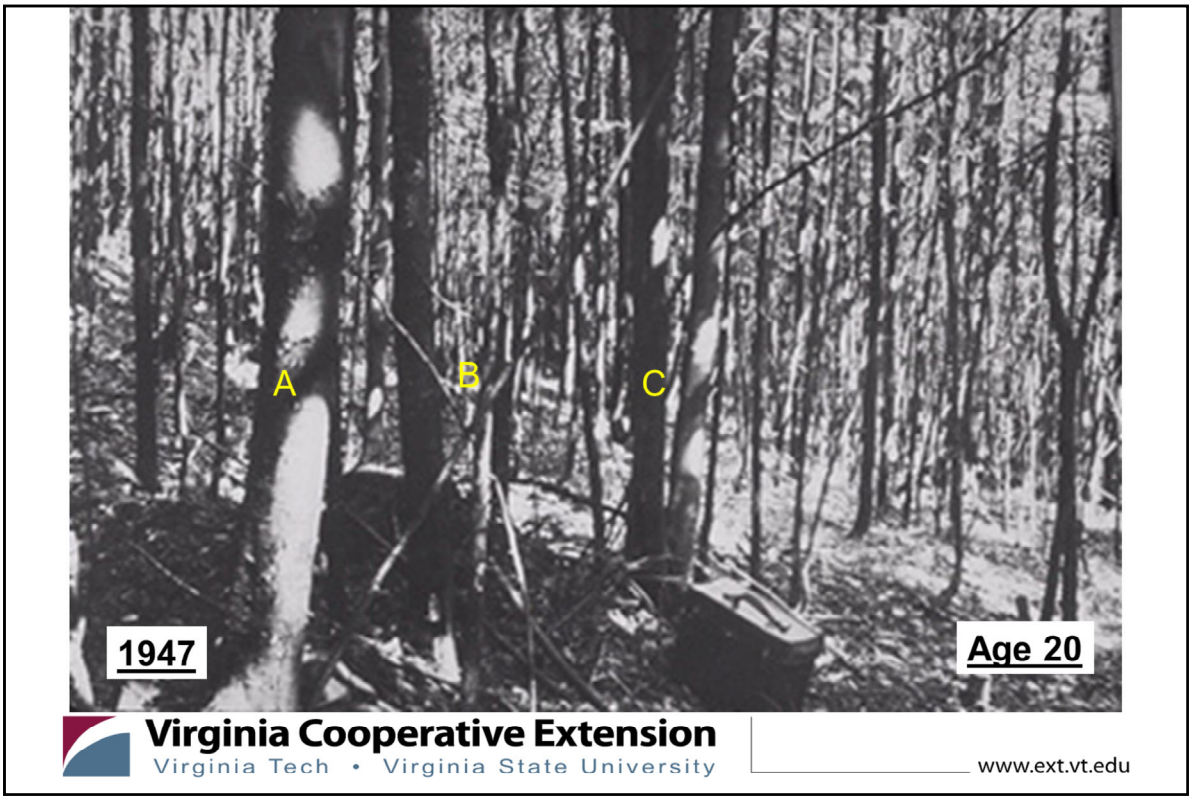
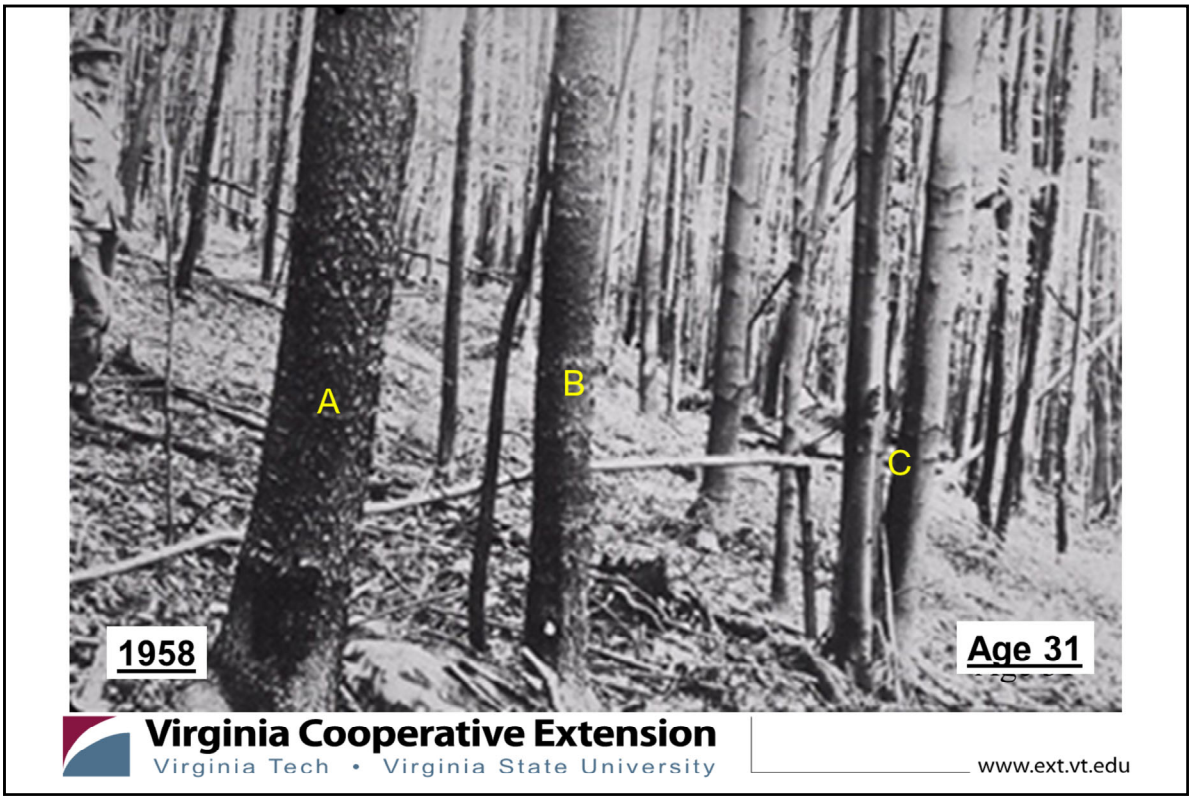
In this situation a clearcut was done as a silvicultural practice. The shade left by the remaining trees additionally favored shade tolerant species which often are not the most desirable. The clearcut here allows all emerging stems to compete rather than be hampered by the the “picked over” stems left in a high-grade.

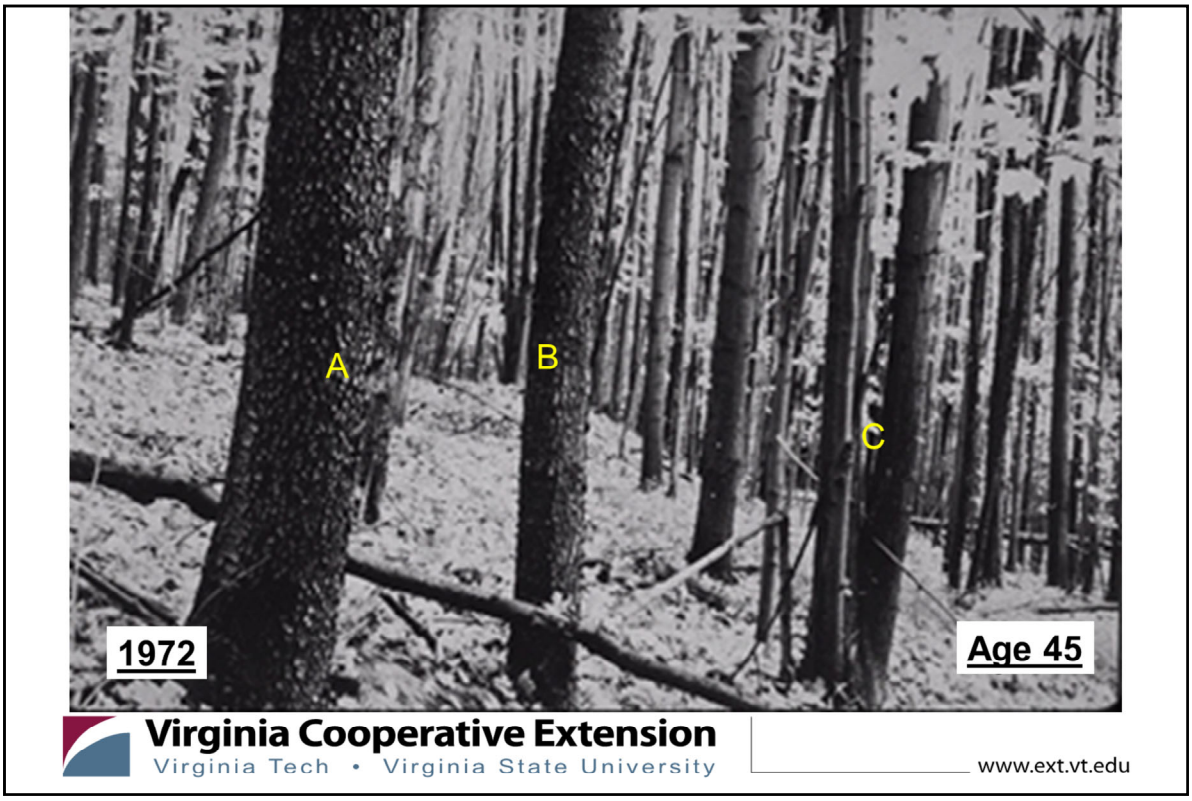
Here is the stand 10 years later in the rapid growth stage. All of these tallest most successful stems are from stump sprouts as they are connected to a large, established root system from the harvested trees. This begins the competition for sunlight stage forming largely straight trunks, self pruning lower limbs. Lots of trees per acre. Management could begin at this stage, but still a bit tricky and natural means of competition sometimes best to let take place.



Here we are at age 20. Considerably fewer trees per acre and the strongest have thrived. This is a good stage to do some timber stand improvement.



Age 30 you can see diameter growth continuing to take place on the most dominant trees. This is nearing the state that a thinning could occur if markets were present. If not, continued timber stand improvement could take place.



Here is the stand at age 45. In the past this is when the high-grading typically began. One thing that might be noticed is limited understory. Some of this is due to exploding deer populations in Pennsylvania. This is not necessarily a great thing, give us an aesthetic, but not beneficial to all wildlife. OK for crop tree growth, but may need balance.

Age 60, seeing primarily drop trees left. Of course many crop tree species such as oak supply hard mast in the form of seeds or acorns for wildlife.

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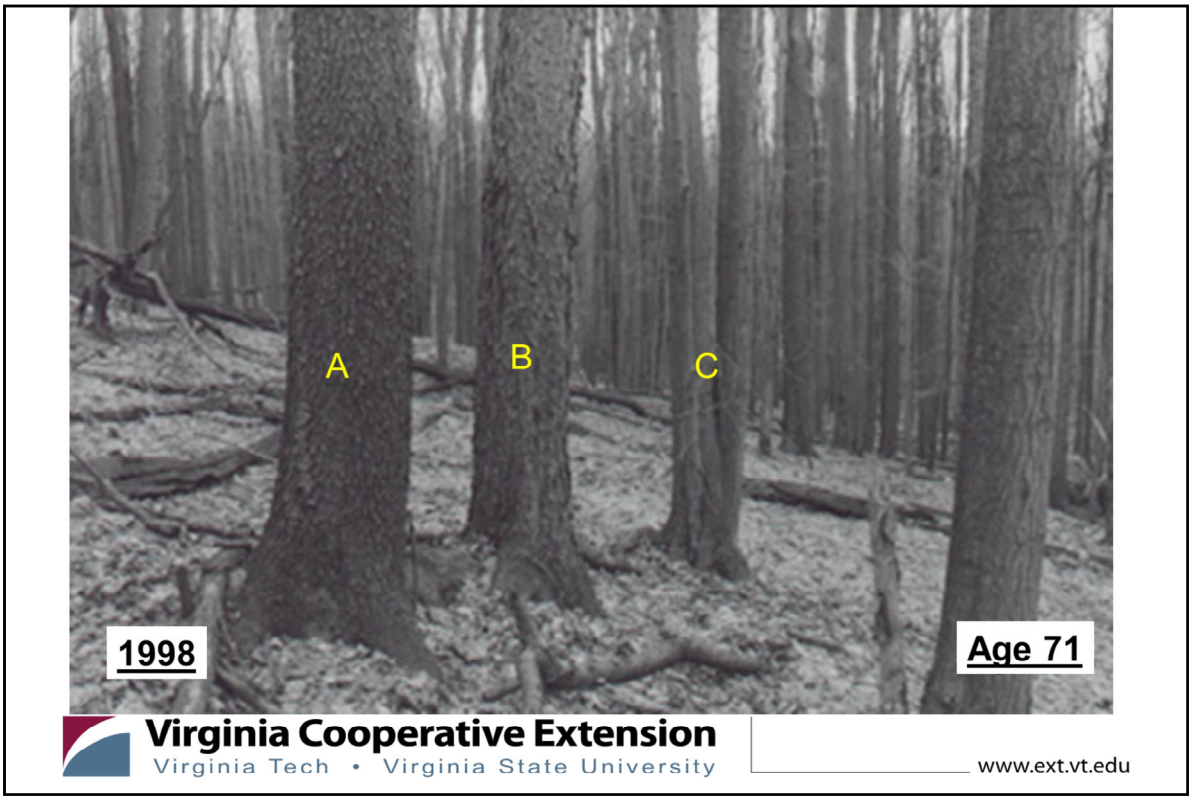

At age 71 we can see a well stocked stand which judging from the downed stems may be beginning to lose more volume to mortality than is growing.

Timber stand improvement is a great technique that can be used when the dominant trees reach a height where excessive branchiness won't result. You can begin removing trees of undesireable species and poor form.

Crop tree release can be done later where specific trees of desireable species and form are left and adjacent trees which are competing for resources (primarily sunshine) are removed, focusing growth on trees chosen for future markets.

Legal Constraints

- Boundaries and access
- Buffers – water quality / visual / certification
- Easements – better check

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Legal contraints are not overwhelming in Virginia but do need consideration. The first would be where property boundaries are located and road access to the timber for harvesting purposes.

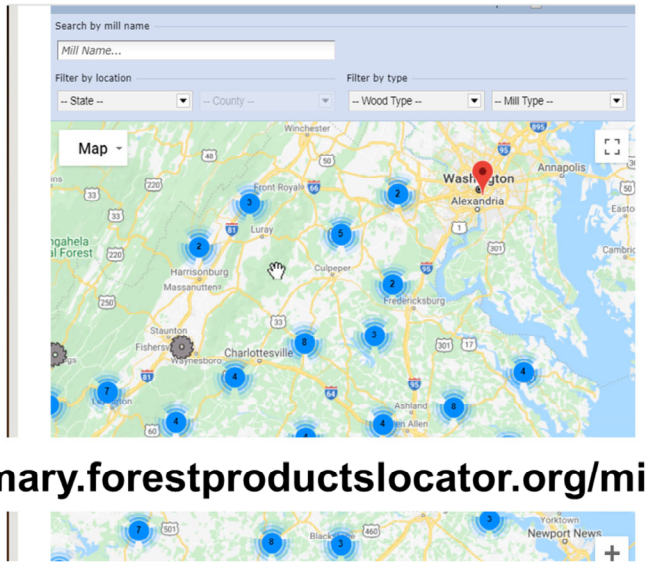
We encourage all landowners to mark and maintain known boundaries to avoid incidental trespass.

There may also be a consideration of buffers which may be required for water quality or certification purposes. Likewise buffers may want to be left for visual reasons. Lastly more and more properties In Virginia are having conservation easements placed on them. Some of these easements specify IF and HOW management can occur on the property. This should be checked.

Access To Markets

- Generally, the hardwood markets are located in the western part of the state and pine markets located in the eastern and piedmont due to where those species grow best and have naturally been distributed
- The numbers of markets have generally been declining, however the volumes of the existing markets have generally been increasing.
- Transportation is a huge factor in cost, thus price received by landowners

Access To Markets



https://primary.forestproductslocator.org/mill-map

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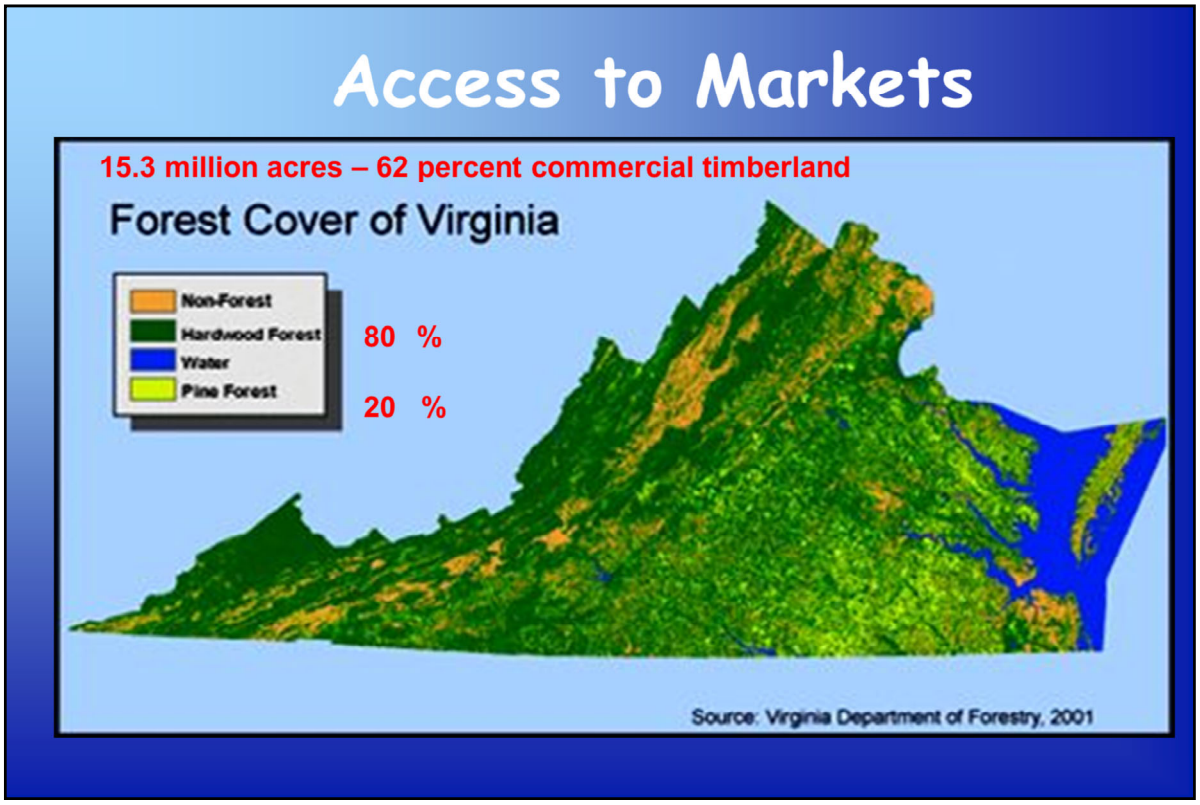
Access to markets is having an increasing impact in todays economy.

The numbers of markets have generally been declining, however the volumes of the existing markets have generally been increasing.

Transportation is a huge factor in cost, greatly impacting the price received by landowners



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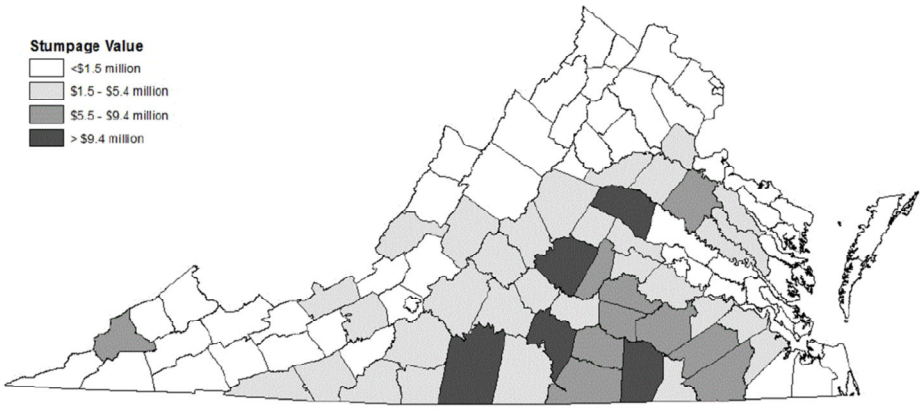
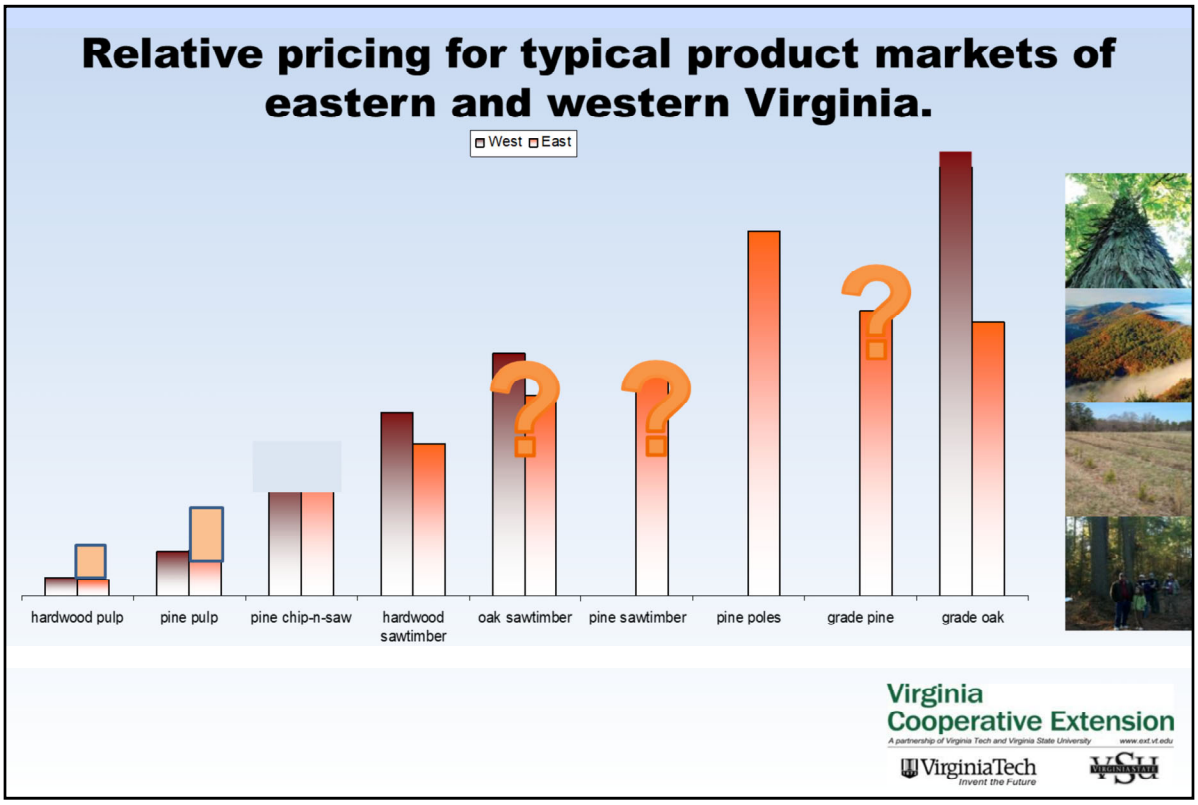
1.14 Value of Virginia Stumpage by Locality, FY 2011



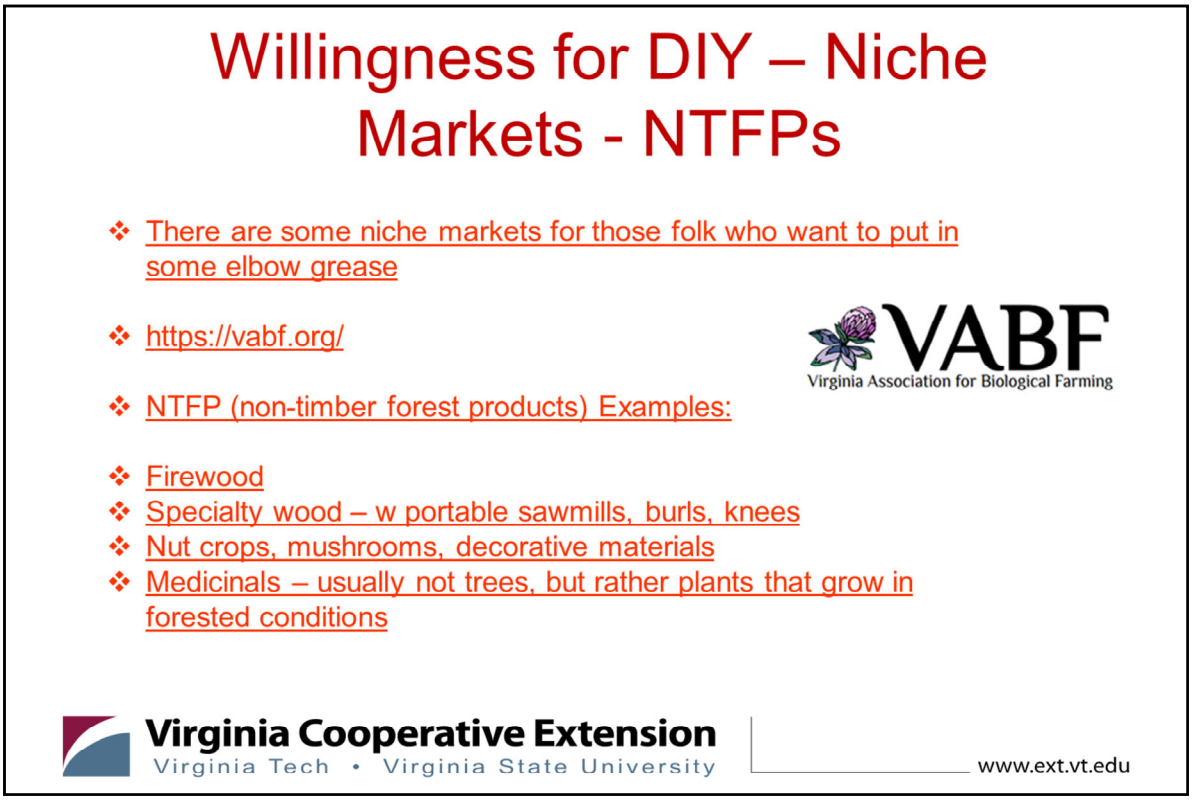
Source: Virginia Department of Forestry

This shows counties with highest overall value in wood products, generally correlated to access to mills and total acreage in merchantable timber.

Wood quality and the products it produces ranges vastly in volume demanded and value.



Here is a quick visual showing several product classes across the state due to available markets.



Finally many beginning farmers may want to explore which niche markets or non-timber forest products can be gleaned from the forest. The Virginia Association for Biological Farming may have information and contacts for many of these products whether they be medicinal products, nut crops, mushrooms, moss and decorative materials, needles for mulch, syrup, specialty wood products such as burls or gunstocks, or simply firewood.

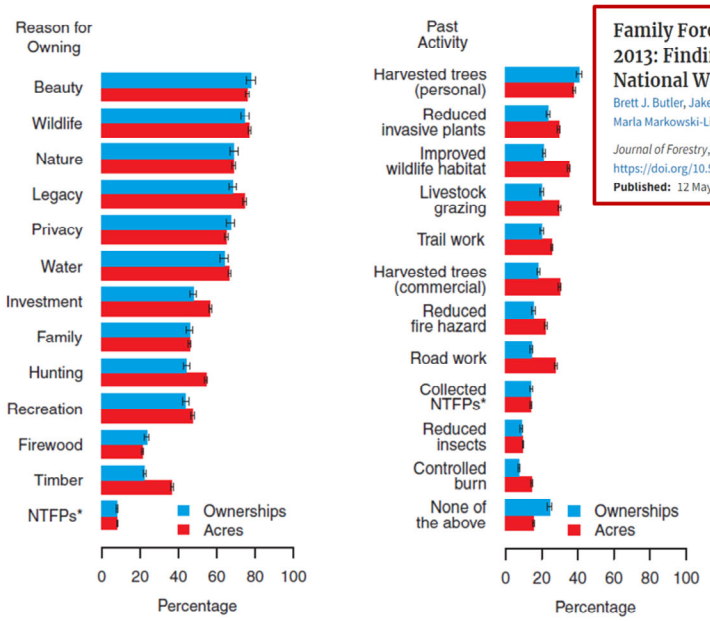
What Do You Want / Where to Begin

- Management Goals
- Constraints : Social, Economic, and Biological
- Develop a Plan
- Seek Assistance : Natural Resource Professionals and Agencies

So once we know where we are, we need to determine where we want to go and how to get there

Need to develop management goals, look at constraints, develop a plan, then find assistance to get these management practices done.

Management Goals



Family Forest Ownerships of the United States, 2013: Findings from the USDA Forest Service's National Woodland Owner Survey

Brett J. Butler, Jaketon H. Hewes, Brenton J. Dickinson, Kyle Andrejczyk, Sarah M. Butler, Marla Markowski-Lindsay

Journal of Forestry, Volume 114, Issue 6, 1 November 2016, Pages 638–647, https://doi.org/10.5849/jof.15-099

Published: 12 May 2016 **Article history**

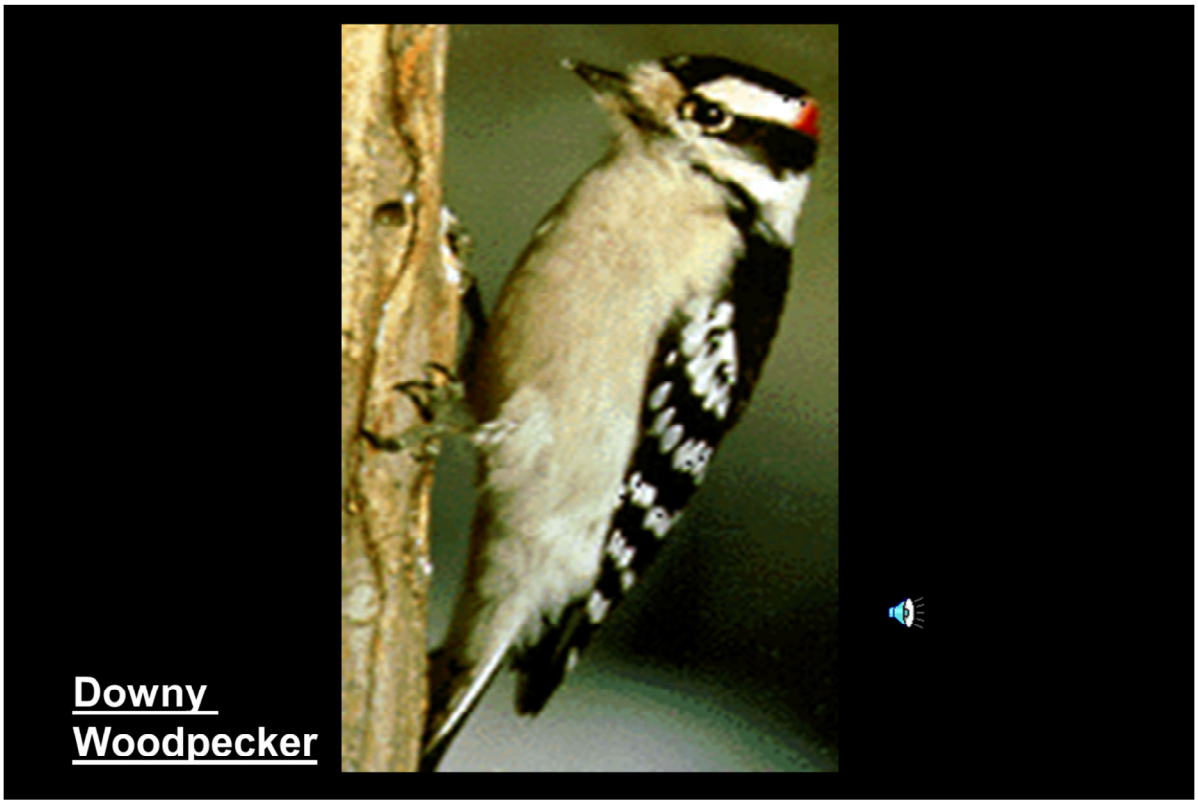
National surveys done for the past 50 years for private landowners have listed beauty, nature, and other amenity benefits as primary and investment/income as low on the list. Yet, at some point the financial reward does entice most to conduct harvests. Sometimes harvests are performed for biological and health purposes, in cases of decadent forests or storm damaged areas.

Constraints : Social, Economic, and Biological

- Primary social in Virginia : local ordinances, aesthetics / neighbor issues
- Economic : Is there enough value to accomplish your management objectives or are you willing to invest in improvements?
- Does the site have appropriate characteristics for what you want to grow
  - i.e. ginseng / oaks in eastern forest

Social constraints are usually not overwhelming in Virginia, but sometimes near highly populated areas or scenic valleys, aesthetic or neighbor issues may provide a pause. Economic constraints are real with the shrinkng tract sizes, reduced numbers of markets, and high-volume loggers.

Also, certain site charactieristics are limiting. Ginseng can't be grown effectively on just any acreage, soil type/pH/and stand condition impacts the success of this crop. Likewise growing oak in eastern forests can be done, but may not be the best choice on all acres.



Wildlife habitat should also be a consideration for how much and when you harvest, especially if there are any rare species around your property.

Harvesting impacts on the soil need to be considered,

As well as on aesthetics

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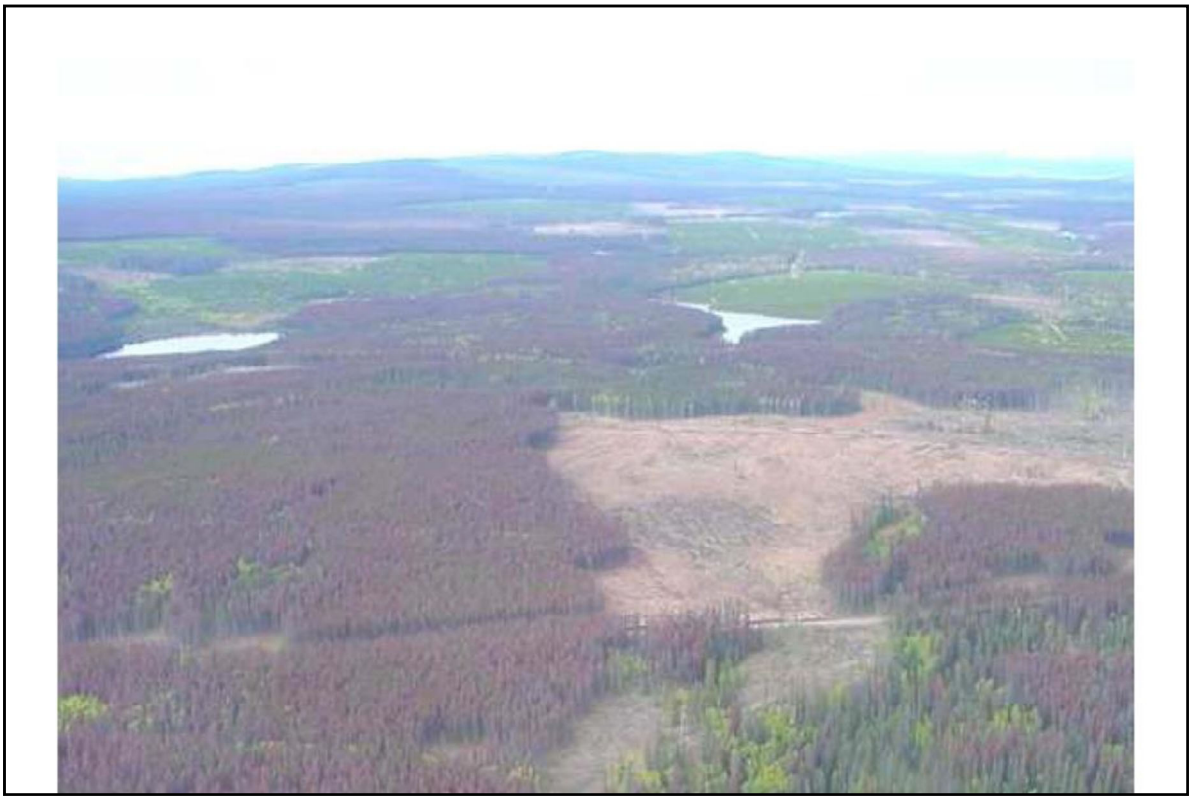
Risk of damage from natural disaster is potentially a factor



As well as damage from a devastating insect or pathogen. The red trees in this photograph are dead pine trees caused by an outbreak of southern pine beetle

These dead oak trees were largely the result of gypsy moth attack of already stressed trees

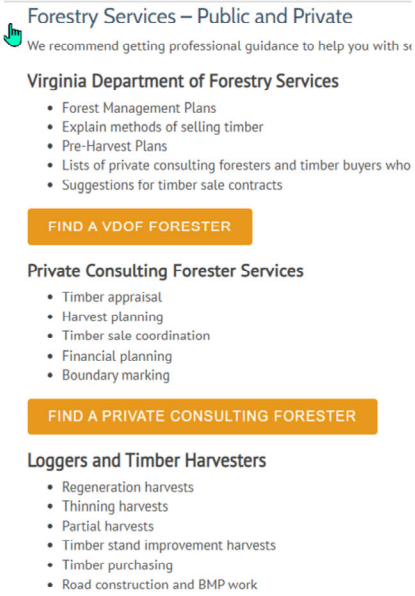
Develop a Plan

- Management Goals
- Constraints : Social, Economic, and Biological
- Develop a Plan
- Seek Assistance : Natural Resource Professionals and Agencies

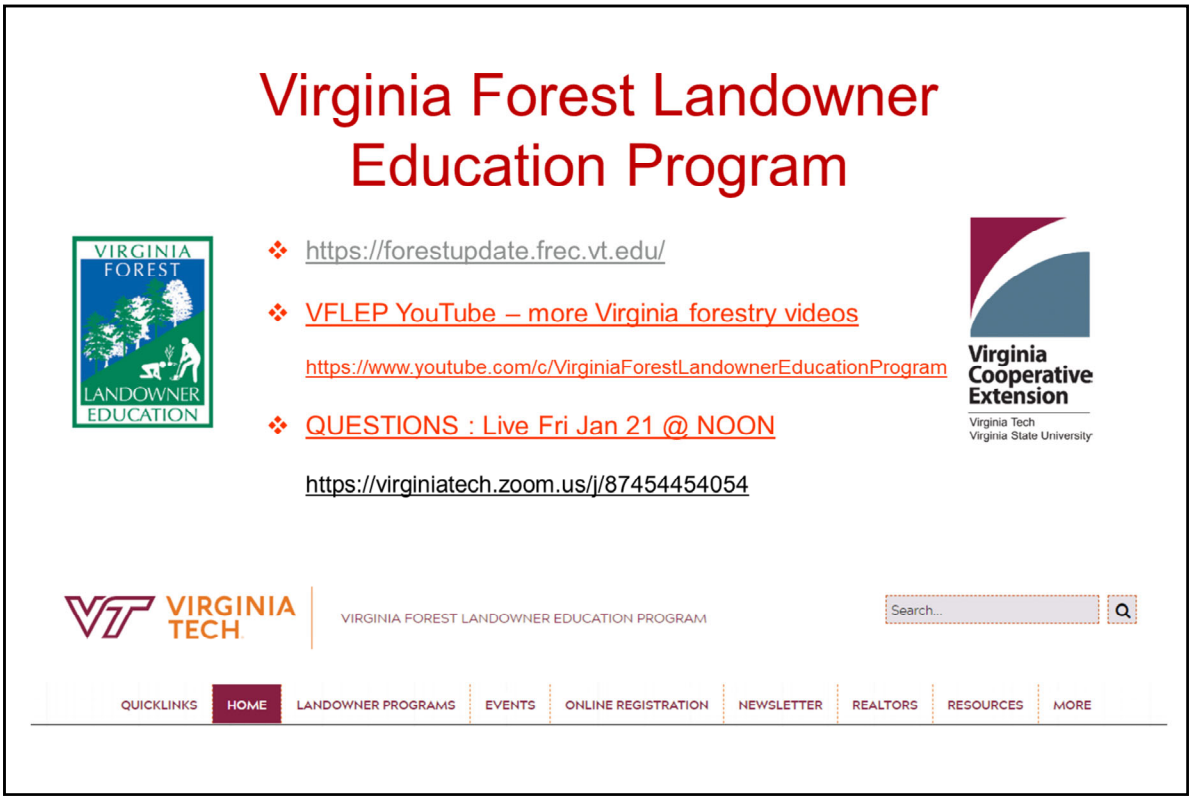
You want to begin by setting management goals, consider your constraints, then develop a plan to achieve those goals, and finally seek assistance in helping to plan and implement the practices.

Seek Assistance : Natural Resource Professionals and Agencies

- https://dof.virginia.gov/
- https://dof.virginia.gov/forest-management-health/landowner-assistance/selling-timber/get-started-selling-timber/
- https://www.nrcs.usda.gov/



For assistance in formulating a plan or conducting / contracting management practices the first place to begin would be the Virginia Department of Forestry. They have foresters who cover every county in Virginia and will give you great advice for next steps, can write management plans (some for a fee), and can connect you with either consulting foresters (many involved with Association of Consulting Foresters) who can assist with conducting timber sales or doing contract management work. And lastly the VDOF is a connection and conduit to the NRCS if you have a plan which aligns with Conservation Funding such as water quality soil stabilization, wildlife benefits, or diminished species restoration.



Finally the Virginia Forest Landowner Education Program which is housed at Virginia Tech conducts courses / workshops / tours / retreats / publications / and other educational opportunites to provide information about your forest resource. Similar to this presentation but more in-depth on specific topics and more detailed according to client needs. Google VFLEP to get to the website. More resources are available at that website.

And remember I will be available next Friday January 21 at Noon for a live Question and Answer session.