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# Forests Through Time

A Woodland Education Program



**Virginia  
Cooperative  
Extension**



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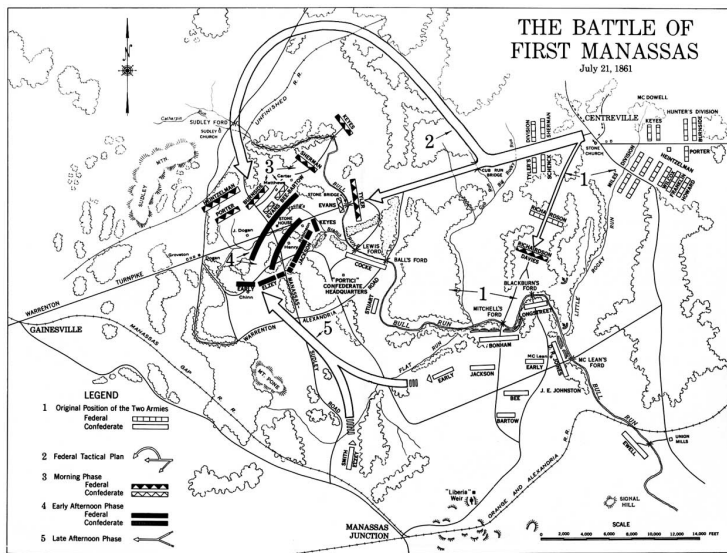
[www.ext.vt.edu](http://www.ext.vt.edu)





## Forests Through Time Educational Program

The Forests Through Time Educational Program was established through the Prince William Link to Education about Forests (LEAF) in an effort to bring education about woodlands to Northern Virginia. Recent forest management activities in the Conway Robinson Memorial State Forest (CRSF) the Forestry Through Time Educational Program was designed to bring forward the historical value of the site as well as present sustainable forest management. The program follows the successional pattern of a natural forest and includes segments on land management and cultural history. History on the CRSF is rich with direct ties to Stonewall Jackson's defense during the First and Second Battles of Manassas (Bull Run). Within its 444 acres are the relic cuts and fills of the Manassas Gap Railroad (MGR), demonstrational timber harvests, and even a special connector trail leading to the Brawner Farm located on Manassas National Battlefield Park (MNB). Follow this guide to learn more about forestry in general, proper land management, and the history of the battles that occurred here.



*Troop locations during the Battle of First Manassas*

## 15. Recreation

A common management goal is to incorporate forest recreation. This is a priceless value that must be strategically managed for whenever put in place. Sturdy trails and careful planning must be considered while implementing recreation into land objectives. Recreation can not only be used as a pastime, but can also be used as a way to generate revenue.

Recreation within state forests is allowed as long as State Regulations are followed. Virginia Department of Forestry Recreation Regulations include:

- Biking and horse riding in designated areas only with State Forest Use Permit
- Pets must be restrained on a leash.
- State Forest Use Permits required for anyone age 16 and older.
- No removal of any tree, plant or mineral.
- Remove all trash.
- No camping, ATVs or public display of alcohol.
- No Fireworks, campfires or open air fires of any type.
- Vehicular traffic on established roads only; not permitted on gated roads.



*Mountain bikers prepare for a ride in the CRSF*



## 14. Watershed Management

A watershed is where the water flows in relation to the landscape. The largest potential pollutants to a watershed from a management system is sedimentation. This sedimentation can be controlled by using the BMPs that are defined by each state.

Currently you are standing in the Chesapeake Bay watershed meaning that all the water that you see here will drain to the Bay. The Chesapeake Bay is the largest Estuary in the US encompassing 64,300 sq. miles (41,152,000 acres). Virginia's state boundary is only 42,774 sq. miles (27,375,360 acres) making the Chesapeake Bay watershed 1 ½ times the size of Virginia!

## 1. About the Conway Robinson

The CRSF is “an urban oasis”—a beautiful forest in the midst of a highly developed urban/suburban area in Virginia. In fact, the 444 acres of pine plantation, mixed pine, and mature hardwoods that compose the CRSF make it one of the largest tracts of undeveloped land owned by the Commonwealth in all of Northern Virginia. The CRSF is surrounded by the Manassas Battlefield and Pageland Farm, areas where Union and Confederate troops were located during the Battles of Manassas (Bull Run). The land itself has a history dating back to the late 1640s when Thomas, Lord Culpepper was awarded ownership of the land for his support of King Charles II. Throughout the years Lord Culpepper's land was divided and sold to other private landowners. Parcels of the original tract changed hands many times through the Civil War. The land was soon after acquired by the esteemed Robinson family. Conway Robinson, the forest namesake, died in 1848 and was buried in Richmond's historic Hollywood Cemetery. Mr. Robinson's daughter, Agnes, donated the 444 acres of land to the Commonwealth in memory of her father in hopes of establishing a wildflower and bird sanctuary. The Conway Robinson Park Memorial Association sought to perpetuate the memory of this distinguished Virginian through the development of this land into a state forest. In 1938 the CRSF opened as Virginia's Second State Forest.



## 2. Forest Succession

Forest succession refers to the stage of maturity the stand is in, and is determined by the dominate vegetation within the stand. Succession follows a predictable pattern: 1. *Disturbance*: An event that causes the end of the previous stand. Naturally this could be any weather event, mechanically this is a harvest. 2. *Open Field*: the general residual stand following any disturbance. 3. *Pioneer Species*: The first stems that typically are shade intolerant species which regenerate from the previous stand's dormant seeds. 4. *Mixed Forest*: Includes the time of "stem exclusion" when trees out compete each-other leaving the most tolerant stems behind. 5. *Hardwood Overstory*: The last stage of Forest Succession when an old growth forest is all that remains. The canopy is composed of mature, dominant trees and there is very little growth is seen in the understory.

## 3. The Value of Wildlife

Wildlife and a timber harvest are often very compatible. Wildlife is, in fact, benefitted in many direct and indirect ways from timber harvests. If wildlife is a specific landowner objective certain harvesting styles can be considered for wildlife value as well as timber value. When trees are cut the unwanted timber may be simply left on the forest floor creating perfect habitat for wildlife if made into brush piles. Regeneration following harvests provides corridors, shelter, nesting grounds and food for wildlife. During a harvest, snags, or dead standing trees, may be left to encourage wildlife denning and nesting. If properly planned and executed wildlife can survive and thrive during and following a harvest. Leaving brush, slash and debris on a site mimics natural litter and debris.

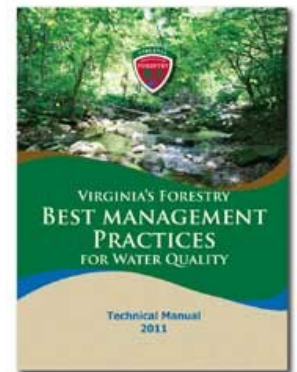


## 12. Gas Line Right of Way

Sometimes unfortunate clearing of swaths of land for gas pipelines or other rights of ways are necessities to meet specific demands of society. To accomplish this sort of outright purchase of land special rights of ways allow access and defined activities while not changing ownership of another owner's land. A right of way can be a means of increasing flow of money to a landowner as well as an opportunity to create habitat for wildlife. Warm season grasses are the common vegetation that is selected as land cover in cleared rights of ways.

## 13. Best Management Practices

Best Management Practices (BMPs) are specific to each state yet are established for the same purposes nationwide. BMPs serve as a guide to loggers and landowners on how to properly plan, execute, and close out a timber harvest. The main purpose for the BMPs are to improve water quality of surrounding bodies of water while also improving site quality after a harvest is complete. These purposes are met by properly harnessing the ill effects of erosion and sedimentation. A harvest's largest potential pollutant is sedimentation runoff from mismanaged roads, barren lands, and overall poor planning. These practices are only voluntary (except within the Chesapeake Bay Watershed where they are mandatory), yet are enforced by local foresters. Sedimentation (soil introduced to waterways) can result in fines to those responsible. BMPs are research based methods to limit erosion and sedimentation.



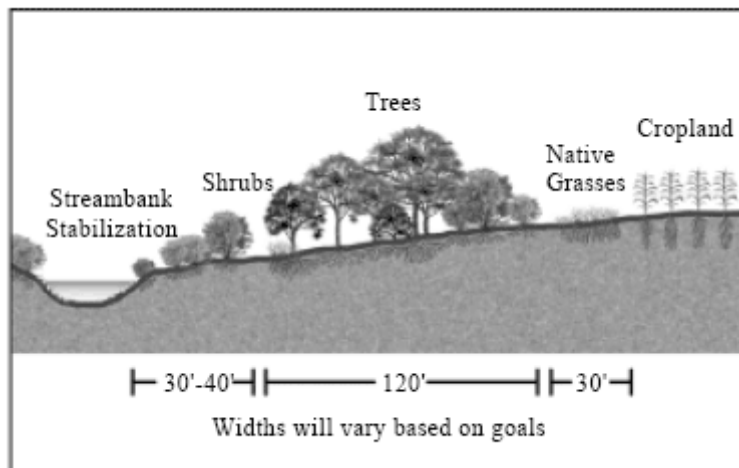


## 10. Clear Cutting

Clear cutting is intended to mimic a large scale disturbance to re-start the stand. It is often the management tool that makes the most economic and ecologic sense to regenerate certain species. When clear cutting, loggers will remove all trees (down to a 2" diameter) from the stand allowing for the maximum sale of products, and create a disturbance regime that favors sun loving plants. Removing all stems from a site introduces potential for products in all markets including biomass, pulpwood, chip 'n saw, saw timber, and veneer.

## 11. Buffers

A buffer is a strip of forested land that is left between a forest management activity and another area of land. The purpose of the buffer can be set for many reasons. Perhaps one of the most important kind of buffers are riparian. Riparian areas are buffered in order to decrease the amount of silt and pollutants that reach bodies of water. Buffers may also be left in place between roadways and harvests in order to maintain aesthetics. Agricultural fields with buffers between them are excellent for wildlife and to create a natural break in the fields. Zone planning for housing allows buffers to act as wind and fire breaks.



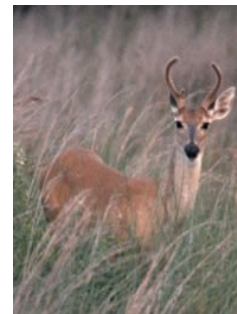
A diagram of a riparian zone buffer for an agricultural setting.

## 4. Timber Stand Improvement

Timber Stand Improvement (TSI) is intended to mimic stem exclusion. Used as a thinning technique, the ultimate purpose of a TSI is its namesake: to improve the overall timber quality of the given stand. This management technique yields no immediate profit, but will ideally increase the value of the residual stand making it a profitable venture in the long run. Usually, a TSI will consist of mechanical processes including cutting species or individual stems to favor others according to the management objectives. TSI may also include chemical treatments to control invasive and exotic species. Benefits of a TSI are not just financial, but are also to the wildlife of the forest. Brush and slash created from the debris increases cover and habitat diversity.

## 5. Impacts of Deer

Whitetail deer (*Odocoileus virginianus*) have reached a population in parts of Virginia that is four times the carrying capacity: the amount of a certain species that can thrive on a specific area of



land. Since deer only prefer native plants, invasives begin to thrive and out compete natives. This scenario can lead to poor herd health and increased contact with humans. Although there are many solutions to this problem, no one answer seems to be agreeable within the public eye. Until a consensus is reached, the immense environmental impact caused by the high number of whitetail deer population can be witnessed and monitored with deer exclusion plots. These established areas within the CRSF simply keep the deer from interacting with the natural growth of vegetation allowing managers to get an idea of what natural plant diversity is possible. The Conway Robinson State Forest has experienced several rounds of intense deer management since 2008 which has already resulted in a healthier understory.

## 6. Plant Species in the Conway Robinson

The Conway Robinson has been delineated into nine different cover types within its boundaries. These include Mixed Upland Hardwoods, Pine Hardwood, Mixed Bottomland Hardwoods, Baldcypress, Loblolly Pine, Virginia Pine, Eastern White Pine, Shortleaf Pine, and Mixed Pine. Within these separate cover types, these are the species that you can expect to see:

### Hardwoods-

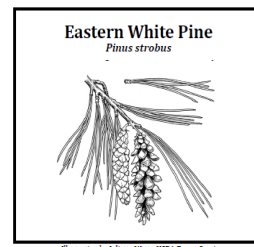
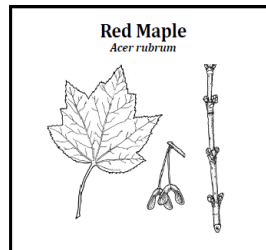
- **White Oak** (*Quercus alba*)
- **Chestnut Oak** (*Quercus prinus*)
- **Black Oak** (*Quercus velutina*)
- **Southern Red Oak** (*Quercus falcata*)
- **Northern Red Oak** (*Quercus rubra*)
- **Post Oak** (*Quercus stellata*)
- **Mockernut Hickory** (*Carya tomentosa*)
- **Sweet Birch** (*Betula lenta*)
- **American Elm** (*Ulmus Americana*)
- **Red Maple** (*Acer rubrum*)
- **White Ash** (*Fraxinus americana*)
- **Yellow-Poplar** (*Liriodendron tulipifera*)

### Pines-

- **Eastern White Pine** (*Pinus strobus*)
- **Loblolly Pine** (*Pinus taeda*)
- **Eastern Red Cedar** (*Juniperus virginiana*)
- **Baldcypress** (*Taxodium distichum*)

### Invasives-

- **Tree-of-Heaven** (*Ailanthus altissima*)
- **Autumn-olive** (*Elaeagnus umbellata*)
- **Japanese Honeysuckle** (*Lonicera japonica*)
- **Multiflora Rose** (*Rosa multiflora*)



## 8. Shelterwood System

Shelterwood harvests allows for regeneration of certain desired species. This technique is intended to mimic a natural disturbance that removes a portion of the stand's standing trees. This is accomplished by harvesting all but a certain number of the best trees leaving select strong, dominant "shelter trees." If done properly, this will allow for natural regeneration within the new stand to occur from the crossing of AGS trees. The residual stand will also, in turn, be "sheltered" from the elements by the remaining trees from the previous stand. After several years of growth the remaining AGS from the initial stand can be removed, increasing the available water and nutrients for the then established new stand. A shelterwood system will essentially create a two-aged stand allowing for more income generating opportunities.



## 9. Thinning a Pine Plantation

Thinning a stand holds similar purposes as a TSI. It is also intended to mimic stem exclusion, but is done at a later time than TSI. Therefore it also mimics disturbance such as blow down or individual tree mortalities. The main purpose of a thin is to eliminate competition and UGS trees from a stand and allow for select AGS stems to continue to grow at a faster rate and with less restriction. The first harvest of a thinning is usually pre-commercial, but due to the improved health and growth of the stand there is potential of commercial thinning in the future (the sale and use of harvested stems). At each thinning more of the initial basal area is removed allowing the residual stand less competition over water and nutrients as well as an increase of light to the understory. Similar to a TSI, a thinning will have to be managed for specific invasive species and exotics. Thinning works best in a plantation style stand and is used mainly with Pine species. This allows harvests to simply target stems to be removed to meet a specific spacing.

## 7. The Manassas Gap Railway

An unfinished railway bed runs through the center of the Conway Robinson State Forest. The Manassas Gap Railway was the independent venture of Edward Carrington Marshall in 1850. Initially, the MGRR was planned to link the growing towns of Northern Virginia to the rich Shenandoah Valley. Starting at a junction with the Orange and Alexandria Rail Road at Manassas Junction the MGRR traveled a line through Gainesville with plans to terminate in Harrisonburg. With the help from Chief Engineer John McD. Goldsborough and much local labor, the MGRR began taking form in 1850. Reaching Gainesville by 1851, a right-of-way was secured to cross through the Pageland Farm. This was granted by its owner, James S. Purdy, a northern sympathizer who had left the south at the beginning of the war. Construction of cuts and fills to ensure a level grade commenced on the almost 12 acre right of way over Pageland Farm and what is currently the Conway Robinson State Forest but was slowed and then halted all together due to high debt the MGRR was facing and the start of the Civil War. Although serving a short route, the MGRR offered the first rail troop transport of the war allowing Stonewall Jackson's troops easy access to most of Northern Virginia. Beyond transportation, the cuts and fills located on Pageland Farm would prove to be strategic points of defense for Stonewall Jackson's troops during the First and Second Battles of Manassas (Bull Run) ultimately granting him victory. After the war came to a close, Marshall wished to continue his venture but found the railroad in shambles and bankrupt. Both the Confederate and Union troops had ripped up rails and destroyed almost all the rolling stock. Already in debt, Marshall merged the MGRR with the Orange and Alexandria Rail Road in 1867. With no use for the land in Manassas, Purdy sold the Pageland Farm right of way to Christian H. Seaman in March of 1871.



One dollar share in the Manassas Gap Rail Road Company .

## Invasive Species

Invasive species are not picky when looking for a place to grow. They are plants that outcompete natives so they must be eradicated from stands. Invasives grow in a similar fashion to pioneer species by growing and reproducing rapidly, yet unlike the pioneer species they do not die off and leave the stand. Generally, invasives begin to take over the stand creating an immense amount of competition to the trees over light, nutrients and water. Invasive species can entirely eliminate the native vegetation of a stand's understory. Invasives can be managed either mechanically (physically removing the plant) or chemically (herbicides). Mixing the correct herbicides will eradicate only specific species while leaving others unharmed. Herbicide treatments can potentially be more cost effective than mechanical treatments if they are carried out properly.

## Notable Species

The Conway Robinson State Forest is home to many native plant and animal species common to the Commonwealth. Within the 444 acres of the CRSF are three species of plants that fall on the rare or watch lists. These are: Yellow Aven weed (*Geum alep-picum*) which is rare, Spotted Joe Pye weed (*Eupatorium macula-tum*) which is rare, and Northern Prickly Ash tree (*Zanthoxylum americanum*) which is on the watch list.



Yellow Aven



Prickly Ash



Spotted Joe Pye



### Conway Robinson State Forest Features:

Trails: 5.1 miles

Vehicle Roads: 0.2 mile

Gated Vehicle Trails: 1.4 miles

Ponds/Lakes: 0

Hunting: No

Picnic Shelter: 1

Fishing: No

Restrooms: No

