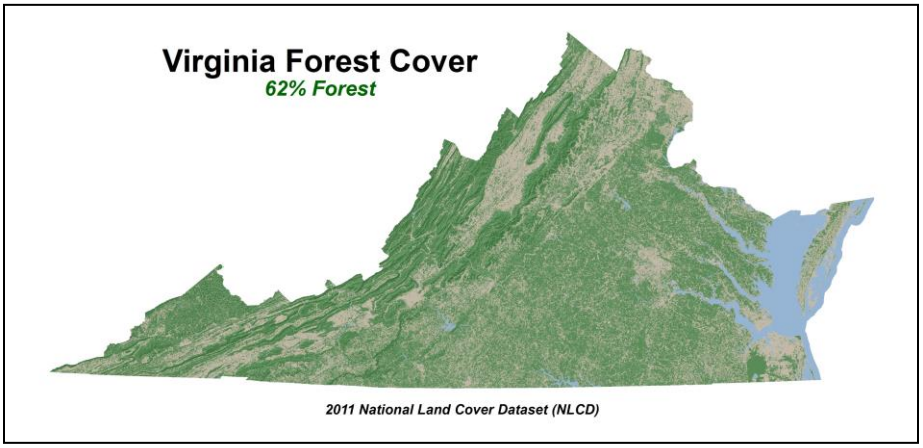
Virginia's Forest Resources

Forests cover 62 percent of the state's land area, making forestry the single most important land use in Virginia. Forests can grow in areas with rich soils as well as in areas that may be less suited for other uses, such as agriculture. On the *Coastal Plain* you may see some forests growing on land that could be considered too wet (at least seasonally) for farming, such as in swamps and on land that has a high water table. On the *Piedmont*, you'll find some forests growing on land that was once forested, then farmed but has grown back into forestland through a process called succession. In the *Blue Ridge*, *Ridge and Valley* and *Appalachian Plateau* regions, forests can grow on land that may be considered too steep or too rocky to farm. Our forests are a truly remarkable natural resource. Two-thirds of all of the forestland in Virginia is owned by private landowners. A small percentage of forestland is owned by corporations. Other forestland is owned by local, state and federal governments and held as forests and parks. As of 2016, Virginia has a national forest (the George Washington and Jefferson), 24 State Forests, the Shenandoah National Park, 36 State Parks and 62 natural area preserves.

Forests are a Renewable Natural Resource

A natural resource is something useful coming from nature. We get many useful things from forests, such as paper products and wood.
A *renewable* resource is one that can replenish itself after it has been harvested. Forests replenish themselves by growing from seed or sprouting from stumps or roots. Landowners often assist this process by planting trees that have been grown from seed in special tree nurseries. The Virginia Department of Forestry grows seedlings at two locations in Virginia.



In 2015, Virginia's forest products contributed $17 billion annually to the economy and employed more than 103,000 people. Other forest benefits, such as recreation, wildlife habitat and environmental benefits, add an

additional $9 billion and tens of thousands of jobs. Virginia's "working forests" reduce air and water pollution, protect water supplies, reduce storm water runoff and reduce heating and cooling costs.

The term *sustainable* is often mentioned when discussing renewable resources. In forestry, one measure of sustainability is to compare the growth of forests with removal. In 2007, Virginia's forests grew by 1,030.4 million cubic feet, while we harvested 827.5 million cubic feet. Because we are growing more than we are harvesting, we are practicing sustainable management.

Challenges: Deforestation, Invasive Species and Global Competition

A Partial List of Virginia Forest Products

- softwood lumber (for home construction)
- hardwood lumber (for flooring and manufacturing)
- furniture and furniture parts
- cabinets and millwork
- oriented strand board (OSB)
- pallets
- posts and poles
- copy paper
- paperboard (baseball cards, food containers)
- newspaper
- cardboard boxes
- fragrances
- Christmas trees, wreaths and roping
- Fluff pulp (used in diapers)
- Biomass
- wildlife
- clean air and water

Virginia's forests and forest industries face significant challenges. Deforestation is one challenge frequently mentioned in the media, but usually in the context of global trends and issues. Deforestation should not be confused with timber harvesting, because, in most situations, forestland will grow back after harvesting. Historically, most of what can be called deforestation in Virginia occurred when forestland was converted to agricultural use prior to 1890. This was followed by a period of *afforestation*, when agricultural land reverted back to forest and forestland actually increased. Today, forestland is again being lost but, this time, to urban and

community development. In recent years, forestland loss has averaged about 16,000 acres per year.

Another challenge is the introduction of exotic, invasive and destructive species from abroad. The classic example is the loss of the American chestnut in the early 1900s as the result of chestnut blight, a disease fungus introduced from Asia. Forest managers in Virginia struggle with exotics, such as the dogwood anthracnose and the thousand cankers disease (fungi), the gypsy moth and the emerald ash borer (insects) and tree-of heaven (an invasive plant).

Finally, global competition is a challenge to the forest industry in Virginia. Labor costs in developing countries, often lower than in the US, make our forest products more expensive in the global marketplace. Consequently, manufacturing jobs and facilities are being lost, particularly in the furniture industry. As mills close, communities are disrupted, and we lose markets for our timber. Without a market for forest products, it is possible that land currently in forests will be converted to other land uses.

Forest Communities

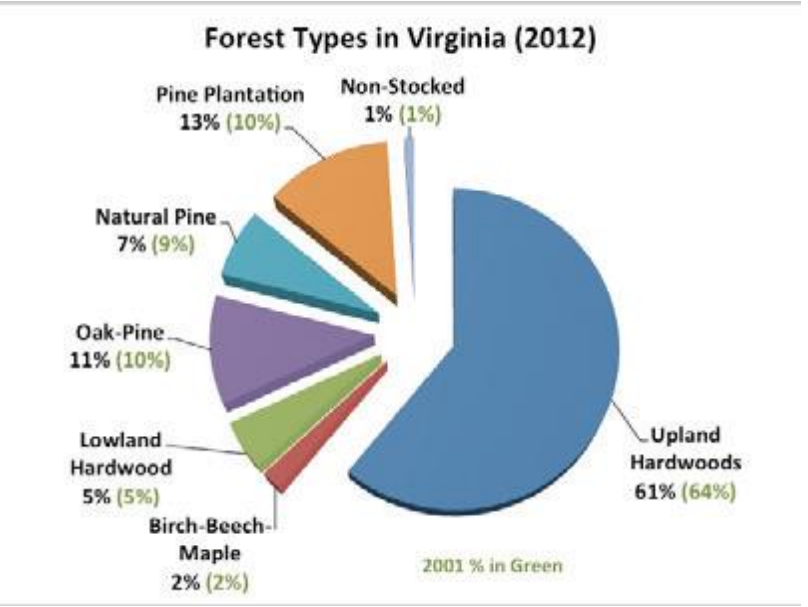
Forest communities are places where certain types of plants and animals are found living together. They are usually named for the dominant trees. The *oak-hickory forest* is the most common forest community in Virginia, regardless of where you live- Coastal Plain, Piedmont, Ridge and Valley or Appalachian Plateau. Common species are white oak, red oak, black oak, scarlet oak, chestnut oak, mockernut hickory, pignut hickory, tulip tree, red maple and black walnut. Pines make up less than 25% of the trees in oak-hickory forests. The *loblolly-shortleaf pine forest* is the second most common forest community.

Both natural and plantation pine forests occur mostly on the Coastal Plain and Piedmont. In natural pine stands, the most common species are loblolly, shortleaf and Virginia pines. In pine plantations, where trees are intentionally planted by humans, the most common type is loblolly, with white pine sometimes planted in the western part of the state. And many natural pine stands are being planted to loblolly pine after harvest, because loblolly grows fast and is in high demand for paper, construction wood and other forest products. In addition, the Virginia Department of Forestry is working in concert with a number of partners to bring back some diminished species, such as longleaf pine and shortleaf pine.

Other common forest types in Virginia include oak-pine in the Coastal Plain and Piedmont and lowland hardwoods in the Coastal Plain. Common species include those in the aforementioned oak and pine types, as well as willow oak, water oak, blackgum, sweetgum, cottonwood, willow, ash, elm, hackberry and red maple in bottomlands.

Top 10 Most Common Virginia Trees

- Yellow-poplar (tulip tree)
- Loblolly pine
- White oak
- Chestnut oak
- Red maple
- Northern red oak
- Virginia pine
- Sweet gum
- Scarlet oak
- Black oak



Forests and Watersheds

Forestry is the best land use in terms of protecting water quality. Generally, the larger the percentage of forest land, the greater is the water quality in receiving streams and rivers. That is why many local drinking water sources, such as reservoirs and rivers, are surrounded by forests. Trees and forest soils intercept and absorb large amounts of rain, reducing the amount of runoff that is discharged into streams and rivers and extending the time that a watershed has to absorb rainfall. This reduces flooding and erosion. Trees also protect water quality by reducing air pollution that gets trapped in their canopies and is absorbed into their leaves. These pollutants are incorporated into the soil after leaf fall where they are broken down by microbes.

Riparian buffers

The lands next to streams and rivers are called riparian areas. Trees planted here are extremely valuable for removing pollutants before they reach water. When we plant trees in these areas, it is called a riparian buffer. There are many opportunities in agricultural and residential areas to plant riparian buffers.

Timber Harvesting is Important for Managing Healthy Forests

Trees do not live forever, and they generally grow slower as they get older. As trees die, they can become fuel for catastrophic wildfires, and when they grow slower, they become more susceptible to insect attack and disease. Therefore, it is often necessary and desirable to harvest timber. Forest management and timber harvesting can be accomplished without harming the soil and water. The key is a well-planned project using "best management practices," or BMPs for short. Examples of best management

practices include well-constructed logging roads that allow trucks to neatly enter and exit an area; properly-located skid trails where skidders drag logs to an area called a landing to be loaded onto log trucks; stream crossings that minimize sedimentation and damage to the stream bed, and quickly replanting disturbed soil with grass.

There are several ways to harvest timber. *Clear cutting* is a method where all the trees are removed at once, allowing full sunlight to reach the forest floor. This type of harvest is done when we want to regenerate trees that are adapted to high sunlight conditions (see the table below). After clear cutting, the soil is usually well protected by leaves, shrubs, new vegetation and woody debris left on site. Since most erosion comes from logging roads, clear cutting also has the additional advantage of needing only temporary roads that can be re-vegetated after harvest.

TREE ADAPTATION TO LIGHT CONDITIONS

Needs shade	**Intermediate**	**Needs full sunlight**
Dogwood	Oak	Pine
Beech	Hickory	Tulip Tree
Sugar Maple	Ash	Red cedar
Hemlock	White Pine	Black Cherry
Spruce	Sycamore	Black Locust
	Elm	Sweetgum
	Red & Silver Maples	Walnut

Selective harvest is a method where only part of the forest canopy is removed at one time. It works best when we want to regenerate trees that require shade to grow properly. Care must be taken not to remove only the best trees and leave the worst trees, a term called high-grading. Because harvesting occurs several times over the life of a forest stand, special care must be made to keep roads properly maintained.

Other timber harvesting methods include: 1) seed tree, where a few trees are retained to produce seed for the next stand of trees; 2) group selection, where clumps of trees are removed, much like a small clear cut, and 3) shelterwood, where a third to half of the canopy is removed at each harvest.

In some types of forests, low-intensity fires are important to maintaining healthy, dynamic ecosystems. For this reason, foresters and wildlife managers often use "prescribed" burning to improve tree planting and habitat conditions. Fire clears the forest of woody debris, providing room for new plants to grow. This new growth becomes food and habitat for many birds and animals. Some plants even depend upon occasional fires for reproduction.

Virginia and Its First Inhabitants

American Indians used trees for many purposes. Hickory, oak and chestnut trees were valued for food. The word “hickory” is actually an Algonquin word that we still use today. The bark of other trees, such as elm and yellow-poplar, were used for fiber and to cover lodges and longhouses. Pine and yellow-poplar were used for canoes.

Colonization and Conflict

Colonists had other uses for trees. In fact, Virginia was established in part to secure a supply of wood and resin needed for boat building. Live oak was prized for its wood, and longleaf pine was prized for its resin (used to seal boats to prevent leakage). Both trees are found south of the James River in Tidewater Virginia. Sassafras was an important early export, before tobacco.

Civil War and Post-War Eras

The height of deforestation in Virginia probably occurred around the time of the Civil War. This coincided with land clearing for agriculture. In the post-war era, much of this agricultural land was abandoned and came back as forest (forest succession). Today, 62 percent of Virginia is forested – more than at the time of the outbreak of the Civil War.

Virginia 1900 to the Present

Virginia’s forests and forest products represent the state’s third most valuable economic driver, after agriculture and tourism, contributing more than $17 billion to the economy each year. Most of Virginia’s paper industry is located on the Coastal Plain and Piedmont, where the supply of “yellow” pine (loblolly, Virginia and shortleaf) is the greatest. Yellow pine fibers provide strength to paper. Some of our finest hardwoods are grown in the Blue Ridge and Valley and Ridge provinces, especially where soil conditions are favorable for rapid growth. This is where our furniture and cabinet industries are located. Because we are close to ports like Hampton Roads and Baltimore, we are a leading exporter of fine hardwoods.