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Sustainable Forestry: A Guide for Virginia Forest Landowners

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Front cover: Shortleaf pine is a diminished species in Virginia. The Virginia Department of Forestry is working to restore this native pine throughout the commonwealth.

Back cover: Well-managed forests help keep the waters of Virginia clean.

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Introduction

As a private woodland owner, you are a vital link in the sustainability of Virginia's forest resources. Your land provides many benefits to all Virginians, including wood products, wildlife habitat, clean air and water, and recreational opportunities. Because woodland owners like you own two-thirds of the commonwealth's forestland, the decisions you make regarding your woods today will impact the quality of Virginia's forests for many years. The purpose of this publication is to provide you with a set of suggestions for starting or continuing to actively manage your land. In addition, this guide will help you understand the importance of management planning and how to work with natural resource professionals

The information contained in this publication regarding taxation and environmental regulations is not official government interpretation. Regulations and laws are constantly evolving, so you are encouraged to obtain professional assistance before making your final management decisions. Resources for learning more about any of the topics covered are provided at the end of this document as well as a list of agencies you may contact for further assistance.

What Is Sustainable Forestry?

Virginia's forests make vital contributions to the commonwealth and beyond by providing environmental, social, and economic benefits essential to our quality of life. While sustainability is a dynamic concept, a basic principle is clear: sustainable forestry consists of those management practices that meet present needs without compromising the ability of future generations to meet their own needs. Specifically, sustainable forestry integrates reforestation, and the managing, growing, nurturing, and harvesting of trees for useful products and ecosystem services such as conserving soil, protecting air and water quality, sequestering carbon, increasing biological diversity, conserving wildlife and aquatic habitats, improving recreational opportunities, and protecting aesthetics.

Examples of sustainable forestry practices include:

- Planning for and implementing regeneration practices.
- Minimizing the impact of forest management activities on water quality and aesthetics.

What is the Sustainable Forestry Initiative?

The Sustainable Forestry Initiative¹ program is a comprehensive system of principles, objectives, and performance measures that integrates the perpetual growing and harvesting of trees with the protection of wildlife, plants, soil, and water quality. This comprehensive system is the SFI 2021-2026 Forest Management Standard. SFI Inc. is an independent, nonprofit organization with a science-based, internationally recognized forest management Standard for North America. SFI Inc.'s 18-member multistakeholder Board of Directors comprises three chambers, representing environmental, economic, and social interests equally, so it can meet the many needs of forests and communities.

The SFI 2021-2026 Forest Management Standard is based on principles and measures that promote sustainable forest management and consider all forest values. The SFI 2021-2026 Fiber Sourcing Standard includes unique fiber sourcing requirements to promote responsible forest management on all forestlands in North America.

SFI certification also extends to the market. When consumers see the SFI label on a product, they can be confident they are buying wood or paper from responsible sources – whether they are purchasing reams of paper, packaging, or 2 x 4s. Finally, it is important to know that the SFI program recognizes lands certified by the American Tree Farm System as certified forest content for use in SFI on-product labels. Virginia's wood products industry purchases most of the wood necessary for their manufacturing processes from private forestlands like yours. With the cooperation of many state, federal, and private natural resource agencies, Virginia's forest industry encourages you to consider the information in this brochure and to adopt sustainable practices in the management of your forest.

¹ Sustainable Forestry Initiative®, SFI®, and the SFI logo are registered marks associated with the SFI program.

- Maintaining or improving important habitat elements for wildlife and plant species.
- Managing for populations of imperiled and critically imperiled species.
- Protecting forests with exceptional conservation values.
- Managing biological diversity.
- Limiting the spread of non-native invasive species.
- Utilizing wood resources efficiently.
- Maintaining forest health and reducing wildfire susceptibility.

How Do I Begin?

You can implement sustainable forestry practices at any time. Whether you are a new forest landowner with little management experience, or a veteran forest landowner already actively managing your property, this guide will provide you with useful strategies to make your forest sustainable. You can begin learning about your options by reading through this booklet.

Next, sit down with your family to discuss your goals for owning forestland. A goal is the big picture or a general statement about how you want your land to look in the future. Examples of goals you may have include:

- Improving the health of the forest.
- Harvesting timber and regenerating the forest.
- Providing quality habitat for game and non-game wildlife species.
- Identifying and protecting special sites.

This may also be a good opportunity to discuss the future of your land with your family. Who will carry out your management plan once you are gone? Which family members share your conservation values? How will you pass the land on to your heirs? These are difficult questions, but they are important ones to answer. This process, called legacy planning, can help ensure your forestland stays intact, in forest, and in family ownership.

Once your goals are set, a professional forester (figure 1) can help you develop a multi-resource management plan, the foundation of sustainable forest management.



Figure 1. Working with a professional forester to develop a multi-resource management plan can help ensure you achieve your forest ownership goals.

Develop a Multi-Resource Management Plan

A multi-resource plan considers the management of not only your trees, but all the other aspects of the forest ecosystem. A well-written plan provides a roadmap to help you achieve your goals through well-managed, sustainable forestry practices.

Your plan can also help you:

- Have your woods certified as sustainably managed.
- Qualify for Forest Use Value taxation where available.
- Enroll in cost-share programs.
- Donate a conservation easement.
- Initiate family discussions about the future of your property.

Even if you already have a plan, it's a good idea to regularly review and update it, as your property conditions, resources, and goals change over time. Allowing yourself the freedom to modify your plans as conditions change or as new information or resources become available is known as adaptive management. Adaptive management allows you to implement the best management practices available. Regularly monitoring your property to identify changes is an integral part of adaptive management.

There are several high-quality multi-resource management plans available to forest landowners in Virginia. All plans encourage long-term stewardship by helping landowners practice active forest management. Forest Stewardship, Tree Farm, and Conservation Activity Plans (CAP-106) are all types of multi-resource forest management plans.

Elements of a Multi-Resource Plan

A multi-resource management plan includes key elements that will help you make good decisions about forest management. The plan will include:

- Current forest conditions.
- A detailed map of the property.
- Landowner goals and objectives.
- Management activities, along with a timeline to meet landowner goals and objectives.
- Special sites.
- Presence or absence of threatened or endangered species.
- Soil and water resources.
- Forests with exceptional conservation value.
- Wood and fiber production.
- Current/potential forest health concerns, such as invasive species, wildfire, insects, or diseases.

Plans may also include, if appropriate,

- Use of prescribed fire.
- Protection of wetlands.
- Management for desired species (i.e., bobwhite quail).
- Recreation.
- Aesthetics.
- Biomass production/carbon storage.

These three types of plans are interchangeable when it comes to meeting the planning requirement for cost-share programs, becoming certified under the American Tree Farm System, or enrolling in the Forest Stewardship Program. Check with your forester for other requirements for enrolling in each of these programs.

Implement Your Multi-Resource Management Plan

Many landowners may already have a management plan, but for some, taking the next step of implementing the plan may be daunting. A well-written plan should have objectives (actionable steps), and an accompanying timeline, which can guide you through the process. And remember to remain flexible. If you cannot complete an objective this year, try finishing it next year. Managing your forest is a long-term process. Depending on your resources (i.e., skills, money, equipment, and access to labor), you may be able to complete some objectives on your own. For others, you may need professional assistance.

What follows is a list of common management goals and objectives for working towards them. This is by no means a complete list of possible goals, and the order is arbitrary. The goals in your own management plan may be different. Each management plan is unique, like forests and the families that own them.

Goal: Maintaining and improving the health of your forest

Like all living things, forests are susceptible to a host of potential health threats including wildfires, insect attacks, diseases, nonnative invasive species, and natural disasters. While your control over these threats is limited, certain management actions will protect your investment by reducing your forest's risk.

Some actions you can take include:

- **Planting species best suited for the site.**
Trees planted outside their natural range or on unsuitable sites are generally weak and unhealthy. Unhealthy trees are more susceptible to insect attack and disease and expose the healthy trees in your forest to damage as well.
- **Monitoring the condition of your forest.**
Periodically walk through your forest, especially after severe weather such as ice storms, hurricanes,

and tornadoes. While some level of damage is natural and acceptable, you may want to conduct a salvage cut to remove severely damaged trees before further degradation from insects and disease occurs.

When insect and disease outbreaks occur, respond quickly. Insects and disease destroy more timber in the United States than any other factor. If an insect outbreak with pests such as the southern pine beetle occurs, the infected trees, as well as a small buffer of surrounding trees, should be cut and removed immediately. Becoming familiar with the symptoms of insects and disease outbreaks can help you identify these problems early when they are easier to treat.

- **Thinning overcrowded stands.**

Extremely dense forests (figures 2a and 2b) can result in slow growth. Trees growing in crowded conditions can become stressed which makes them more susceptible to insect and disease problems. Thinning reduces forest density, focusing sunlight, water, and nutrients on fewer trees, resulting in a healthier, more vigorously growing forest.



Figure 2a (top) and 2b (bottom). Thinning operations reduce competition for resources in crowded forests. Thinning can be used in both hardwood (Figure 2a) and pine (Figure 2b) forests.

- **Consider prescribed burning.**

Burning at regular intervals can reduce fuel loads, control rust diseases, and encourage shrub and forage growth for wildlife food and cover (figure 3). Managed forests in the Coastal Plain are often burned every 3 to 5 years. In the Piedmont and Mountains, prescribed fires are less frequent now than they have been historically. A list of prescribed fire contractors can be found at: dwr.virginia.gov/quail/additional-links/prescribed-burn-contractors.



Figure 3. Prescribed fire is a useful tool for reducing fuel loads and creating wildlife habitat.

- **Reduce the risk of wildfire.**

Actions such as salvage logging, thinning, and prescribed burning reduce fuel loads and help reduce the risk of a damaging wildfire.

- **Use the appropriate harvesting method.**

How you harvest your timber depends on your management goals. In Virginia's Mountain and Piedmont hardwood stands, poor harvesting practices such as high grading or diameter limit cutting may have removed the best formed, most vigorous trees of preferred species from the forest, leaving less-desirable trees.

If your goal is a healthy and vigorous forest, in some cases, the best long-term prescription is to remove all trees in the stand (clearcut, figure 4) and start over with natural or planted regeneration. This also holds true if your goal is to grow species that require full sunlight, such as most pines, or yellow-poplar. Most of Virginia's pine and hardwood species that have commercial and wildlife value require full sunlight for optimal survival and growth.



Figure 4. Clearcuts mimic large-scale natural disturbances such as hurricanes and severe wildfires. They are used to regenerate shade-intolerant species such as loblolly pine.

Other harvesting methods remove individual or small groups of trees and are suitable for regenerating species that are more tolerant of shade. With these methods, it is best to cut the worst trees and leave the best trees, so your forest is healthier after each cut.

- **Control nonnative invasive species.** The introduction and spread of nonnative invasive plants, insects, animals, and diseases has severely impacted natural systems. Nonnative invasive species often dominate disturbed sites, such as forest edges and forest road rights-of-way. These species may out-compete and displace native trees, alter the structure and function of forests, and typically have little wildlife value. These infestations erode forest productivity, hinder forest use and management activities, and degrade diversity and wildlife habitat. In addition, nonnative invasive species such as tree-of-heaven and autumn olive are difficult to control once established.

Measures taken to prevent the introduction and spread of nonnative invasives are the most practical and effective approaches. For example, cleaning equipment before it moves onto your property can prevent accidental introduction of unwanted invasives.

If necessary, however, a variety of options are available to help landowners control unwanted species. These include mechanical (such as hand-pulling or mowing), biological (such as insects specifically bred to feed on another insect) or chemical (herbicides). The exact approach needed

will depend on the type of non-native invasive species; however, the use of chemicals should be minimized if possible.

Goal: Harvesting Your Timber

A common component of active forest management is a timber harvest. While the primary driver for harvesting may be financial (i.e., to pay for college or retirement), timber may also be harvested for a variety of other reasons, including:

- Establishing new forests.
- Improving overall forest health and vigor.
- Creating diverse habitats and recreation access.
- Controlling forest density.
- Releasing desirable tree species from competition.
- Controlling forest insects and disease.

To help ensure satisfaction when a harvest is completed, be sure you have a current management plan, as discussed in the previous section, before finalizing your timber sale. Insufficient planning can be costly and can prevent you from reaching your goals. In addition to having a forest management plan, other important steps to consider when planning a timber sale include:

- **Use professional assistance.** If you are uncertain about what you should sell or have other questions about the timber sale process, don't guess – contact one of the sources of assistance listed at the end of this brochure.
- **Mark your boundaries.** Identifying and marking your boundaries are critical first steps in a successful timber sale (figure 5). Poorly marked boundary lines can lead to timber



Figure 5. Making sure your sale boundaries are properly marked can help ensure timber harvests do not accidentally cross into neighboring properties. The yellow posted signs in this photo designate the boundary of the property.



Figure 6. Your trees may be used to make a variety of products, depending on the species and size. These boards were cut from fast-growing loblolly pine.

trespass, that is, the harvesting of a neighbor's timber. The penalty for timber trespass in Virginia could be three times the value of the timber taken plus the expenses of a timber appraisal. Well-marked boundaries will minimize the possibility of trespass. Property deeds, topographic maps, and aerial photographs will greatly aid in helping you establish your boundaries; however, you may need to hire a professional surveyor.

- **Know what you have to sell.**

Have an inventory of your forest conducted to determine what your timber is worth. During the inventory, tree species, merchantable volumes, and potential products (figure 6) will be tallied. Note that timber markets are localized and the price you receive for your timber will depend on many factors including tree quality, size, species, site access, soil conditions, harvest method, market conditions, and distance to the mill. During the inventory, other important non-timber resources, such as plant and animal species of concern, wildlife habitats, sensitive biological areas, historic sites, aesthetics, and wetlands, should be identified. A professional consulting or industry forester can conduct an inventory for you.

- **Work with a qualified logger.**

The forester you work with can provide a list of potential loggers. To choose a qualified logger, consider requirements such as:

- Completion of logger training/continuing education programs such as [Virginia's Sustainable Harvesting and Resource Professional Logger Program](https://sharplogger.vt.edu) (<https://sharplogger.vt.edu>).
- Knowledge and use of forestry BMPs (see next section).

- Proof of adequate workers' compensation and liability insurance coverage.
- Adequate equipment to do the job.
- List of references from previous harvesting jobs. You may want to visit an on-going harvesting operation the logger is conducting (figure 7). During the on-site visit, look at the condition of logging equipment and haul trucks, note whether woods workers wear protective equipment, examine the methods used to protect trees excluded from the timber sale, and check the condition of skid trails, landings and haul roads.



Figure 7. For most landowners, a timber harvest, such as the one shown here, is a once in a lifetime event. Working with a professional forester and a trained logger can help ensure the job is done properly.

- **Secure a written sale agreement.**

Your forest is a valuable economic and ecological resource. When you decide to sell timber, it is important that your short-term and long-term interests be protected. The best way to achieve this is through a written timber sale agreement. Retain this contract as part of your management plan. At a minimum, a good timber sale contract will include:

- Description of land with boundary lines and guarantee of title.
- Specification of payment terms.
- Description of timber, method of designating trees to be cut, and harvesting method.
- Specification of time period covered by the contract.
- Prohibition of excessive damage to residual trees, buildings, fences, and roads.

(continued on p. 10)

Best Management Practices

Best Management Practices are activities designed to reduce erosion and prevent or control water pollution resulting from forestry operations. The potential for water quality issues occurs when runoff from rain or snow moves over a harvesting site. Without the proper use of BMPs, this runoff can pick up and carry away soil and other pollutants, depositing them as sediment into waterways and wetlands, and impacting groundwater recharge.

Forestry activities with water pollution risk include forest road construction and stream crossings; harvesting activities such as skidding and loading trees; site preparation (getting the harvest site ready for reforestation); and chemical treatments like pesticide and fertilizer application. Of these activities, road construction has the greatest potential to degrade water quality, so most forestry BMPs focus on proper road construction to minimize erosion (figure 8).

Creating a preharvest plan before the timber harvest can minimize negative impacts to soil and water quality.



Figure 8. Protecting water quality during all forest management activities is critical. Implementing best management practices, such as installing Geoweb textiles in stream crossings, helps reduce erosion and minimizes soil compaction.

The preharvest plan should:

- **Identify streamside management zones or buffers adjacent to perennial and intermittent streams.**

SMZs are designed to stop runoff from reaching waterways and to keep stream

temperatures cool; harvesting within SMZs may be allowed but should be limited to minimize disturbance of the forest floor and canopy.

- **Require the use of special harvesting equipment and techniques to protect water quality in and around wetlands.**
- **Minimize soil erosion by including properly designed and constructed truck haul roads.** Roads should be designed to follow the land's contour and to allow water removal while slowing the flow of runoff toward waterways (these include broad-based dips, turnouts, and culverts).
- **Minimize stream crossings.**
- **Provide measures for keeping logging debris out of stream channels.**
- **Minimize soil compaction and ground disturbance by restricting the use of heavy equipment during wet periods.**
- **Prevent soil erosion with prompt revegetation of areas with bare soil including logging roads, trails, and loading decks.**
- **Require prompt reforestation of harvested sites.**

If timber harvesting or other management activities are negatively affecting water quality, the logger or timber buyer and the landowner are liable, and each may be required to rectify water-quality problems. The Virginia Department of Forestry (VDOF) has the responsibility and legal right to inspect all timber harvests for water-quality degradation. State law requires that loggers notify the VDOF within three working days of the start of the logging operation. This is easily done by calling (800) 939-LOGS (5647) or on the logger notification page (<https://dof.virginia.gov/logger-notification/>) on the VDOF website.

Be sure that your logger meets this requirement.

- Specification of penalties for damage or removal of unmarked trees.
- Assignment of liability for losses caused by the timber buyer or his agents.
- Requirement of the use of forestry BMPs and adherence to all local, state, and federal laws.

- **Supervise the harvest.**

Before the harvest begins, review the timber sale agreement, and walk the site with the logger. This will give you an opportunity to get to know each other and to explain your objectives for harvesting timber. A logger who is personally familiar with you and aware of your objectives will likely do a better job. Once harvesting begins, either you or your forester should periodically inspect the harvest site. Visits will ensure that logging is being conducted in compliance with the terms of the sale agreement and will identify any potential problems early when they are most easily fixed. When the harvest is complete, conduct a final inspection to be certain that the job complies with Virginia's Forestry BMPs.

- **Keep the aesthetics of the harvest in mind.**

Work with your forester to create positive visual impacts with your timber harvest. Creating openings with irregular borders and leaving trees along ridge tops can help soften the appearance of clearcuts. Allowing recently harvested areas to regenerate (or green-up) before harvesting adjacent tracts can also help the aesthetics of an area. Additionally, the layout and design of the roads, skid trails, and landings can impact the aesthetics of the harvest.

- **Manage harvest residue.**

Typically, following a timber harvest, there is a significant amount of what may be considered non-merchantable logging residue (tops, branches, and otherwise nonmerchantable stems) left on site. As society focuses on deriving more energy from resources other than fossil fuels, these forest residues (also known as woody biomass) are potential sources of renewable energy. New markets for woody biomass are emerging, and where markets exist, landowners may be able to see better utilization from a timber harvest. Harvesting

woody biomass can make the site more aesthetically pleasing and help reduce site preparation costs for reforestation. Biomass harvests, when they occur, are conducted simultaneously with the timber harvest.

However, there is also value in leaving woody biomass on site. Benefits include seedling protection (from deer), and long-term increases in ecological values such as carbon sequestration, soil organic matter, soil moisture and nutrient retention, as well as moderation of soil temperature fluctuations. In addition, the material can be used as a ground cover in implementing BMPs during the harvest. Landowners need to weigh the economic value of harvesting woody biomass versus the ecological values of leaving it on site.

Goal: Regenerating your forest

If you have a multi-resource management plan that includes a timber harvest, a plan for regenerating your forest will be included. You should consider several key items in your regeneration plan. For example, you will need to determine what species you want to grow. Forests are composed of evergreen trees (often pines), deciduous trees (sometimes called hardwoods), or a mix of both. The factors that determine which tree species grow on a specific site include climate, land-use history, soil quality and structure, water availability, and the direction the slope of the site faces (aspect).

The limits imposed by these conditions in combination with your management goals will determine what types of trees are best suited for your forest. When choosing to manage for pines or hardwoods, you should consider a few basic forest ecology principles:

- **Match your goals with your resources.**

Forests are managed in units called stands. A stand is a group of trees sufficiently uniform in species composition, age, and/or condition to be distinguished from surrounding groups of trees. Most forest ownerships are made up of several different stands. Stand boundaries are identified by changes in tree species and are influenced by differences in soils, slope, climate, and other physical characteristics of the land. For example, yellow-poplar, white oak, and eastern hemlock are best suited to cool, wet, north-facing hollows with deep fertile soils. Other species such as Virginia

pine and chestnut oak frequently occur on hotter, dryer, south-facing slopes with shallow soils. Your goals should match the different site types that occur in your forest.

- **Carefully consider all options before converting one forest type to another.**

Conversion involves changing from one forest type to another (e.g., harvesting a mixed hardwood stand and replacing it with planted loblolly pine) or from one land use to another (e.g., from forest to pasture). Conversion is appropriate in some instances but take care to ensure that rare and ecologically significant forest types are not converted.



Figures 9a (top) and 9b (bottom). Before any timber harvest, have a plan in place for how the next forest will be regenerated. East of the Blue Ridge, some landowners opt to plant pine seedlings (Figure 9a). West of the Blue Ridge, landowners may rely on natural hardwood regeneration (Figure 9b).

- **Pine and hardwood forests are established differently.**
 - **Pine.**

Frequently, new pine forests are established by planting nursery-grown seedlings (artificial regeneration, figure 9a). Studies show sites of average quality in Virginia's Piedmont and Coastal Plain regions that are reforested with genetically improved loblolly pine seedlings yield good returns on investment. Returns on investment increase when landowners utilize all available cost-share programs and tax

incentives. While risk factors such as damage by ice storms, hurricanes, insects, and disease may reduce the expected return on investment, proper management can reduce damage from these events. Cost-share is available to assist landowners reforesting with certain pine species.

- **Hardwoods.**

While hardwood trees may also be planted, new hardwood forests are usually established using natural regeneration methods, such as seed germination and stump sprouting (figure 9b), which reduces the upfront investment. When regenerating most Virginia hardwood species, a heavy timber harvest allows sunlight to reach the forest floor, encouraging seeds to germinate and stump sprouts to grow. Later in the life of the stand, you generally need to do some management work (such as thinning) to produce quality hardwood sawtimber. The holding period (rotation age) is longer for hardwoods, often running 60 to 80 years or more. Whether you manage your forests for pines, hardwoods, or both, plan to set aside a portion of the income you receive from your timber harvest to use toward regenerating a healthy new forest. You should aim for adequate stocking levels in your young forest within 5 years. The stocking levels or number of trees per acre will depend on your management goals. A forester can advise you on what to aim for. Reforestation is one of the best long-term investment strategies for forest landowners.

- **Calculate the returns from an investment in reforestation like any other long-term investment.**

To analyze the potential economic return of reforestation on your land, you will need the following information:

 - The site quality or productive capability of your land.
 - The costs of site preparation and reforestation.
 - The amount and frequency of management activities required to maintain and protect a vigorous stand (e.g., prescribed burning, boundary line maintenance, fire/insect/disease protection, etc.).

- An estimate of the future value of harvested timber products.
- The length of time from planting to final harvest.
- Other costs and revenues (e.g., real estate taxes, hunt club lease income, etc.).

- **Afforestation.**

Afforestation is defined as planting trees to create a forest on land that is not currently forested. On privately owned lands, this may include areas that have been in pasture or agricultural production.

Typically, pines are planted for afforestation, but hardwood trees may also be planted. If you are interested in planting open areas on your property, you should consult with your professional forester. They can help guide you as to which species and planting techniques would best suit your preferences and needs.

It's important to keep in mind not all unforested areas need to be afforested. An evaluation should be conducted to ensure afforestation efforts will not have a negative impact on ecologically important natural communities, threatened and endangered species, or native natural communities that could be at risk of becoming rare.

Goal: Creating and improving wildlife habitat

Managed forests provide an abundance of resources other than timber, including wildlife habitat (figure 10). To develop a variety of wildlife habitats, some management options and activities to consider include:

- **Providing a variety of food, cover, and habitat for wildlife by managing some forest stands for a mixture of pines and hardwoods.**

Your forest will attract many wildlife species if you provide a diversity of habitats across your tract, such as different-aged forest stands, a variety of species, forest openings, abandoned agricultural fields, overgrown fence lines, and streams and ponds with clean water.

- **Create unique wildlife habitats along the edges of fields or recent timber harvests.**

Edges are transition zones between two adjoining land use types. Many wildlife species use edge habitat. Soften edges by planting shrubs and

fruit trees along harvest and field/forest borders. Irregular, scalloped forest edges improve the visual impact of timber harvesting, while providing good wildlife habitat. Timber harvests should also be designed to protect aquatic habitats and provide corridors for wildlife to move into and through the area.



Figure 10. All forest management activities have an impact on wildlife. In higher elevation hardwood forests, thinning can be used effectively to create habitat for some wildlife species.

Goal: Conserving special sites, protecting threatened and endangered species, and safeguarding biological diversity

Protecting significant natural communities and unique features in your forest is an important component of sustainable forestry. Accurately note on the map in your management plan if any of these sites are present on your property.

- **Protecting sites with special biological significance.**

NatureServe, an international network of Natural Heritage Programs, assigns plant and animal species and natural communities a conservation status rank based on their rarity and conservation status across their entire range. Significant natural communities include those that are rare in Virginia, as well as exemplary examples of more common types. Species ranked “G1” (global rank 1/critically imperiled) or “G2” (global rank 2/imperiled) are most at risk. Forest certification systems, such as the Sustainable Forestry Initiative, protect all “G1” and “G2” species and natural communities, even if they are not listed and protected under the Endangered Species Act. State rankings are similar (“S1” and “S2”), but only indicate the status of the species within Virginia. More information on special

sites is available from the Virginia Department of Conservation and Recreation's Natural Heritage Program.

If you are fortunate enough to have one or more state or globally ranked species or natural communities on your land, you should be particularly vigilant about protecting them. Your efforts to manage rare species and significant natural communities have the added bonus of protecting more common species, keeping them off regulated lists in the future.

- **Protecting sites with high aesthetic values.**

If your property has waterfalls, caves, exposed rock outcrops, old homesites, or other visually appealing features, you can protect them by leaving forested buffers or taking other appropriate actions to avoid negative impacts on their visual quality and ecological functions (figure 11).

- **Protecting sites with historic significance.**

Examples include Civil War and Native American sites and cemeteries. Because of their significance and sensitivity, these areas are often set aside and managed solely for their unique features.

- **Protecting forests with exceptional conservation values.**

Forests with Exceptional Conservation Values are known sites with viable occurrences of critically imperiled and imperiled species of plants, animals, and ecological communities. Landowners should consider the presence of an FECV on their property and on adjacent properties when developing their management goals. These goals should enhance and protect the FECV, if possible.

Financial Considerations

Timber and estate taxation are the leading management concerns among private forest landowners. Careful planning and accounting practices may save money and help preserve your estate for future generations. Tax laws pertaining to forest management are subject to interpretation and frequent change. The information provided below should not be considered an official interpretation of the federal and Virginia income tax codes, and you are strongly encouraged to seek the advice of a tax advisor on the applicability of the

current tax law to your particular situation. In addition, consult with your forester and accountant to determine the best strategy to protect your assets. Some basic points to keep in mind are:

- **Keep good records.**

Recordkeeping is perhaps the easiest, but most neglected task of the forest landowner. At a minimum, you should keep a journal of all expenses and income along with evidence of transactions such as invoices, receipts, canceled checks, contracts, meeting agendas, mileage records, workshops attended, and maps that pertain to your land and forestry practices.

- **Determine your basis.**

The basis of your forestland is the original amount you invested to purchase your property. This amount is the cost of land including standing timber, roads and buildings, and payments to real estate agents, foresters, surveyors, attorneys, and/or other costs associated with the acquisition. As with the purchase of land, the value of the property acquired by gift or inheritance is allocated proportionally among the categories as listed above. Basis is used to determine gain or loss on sales and exchanges, and for calculating amortization, cost recovery, depletion, and casualty-loss deductions.



Figure 11. Special sites on your property can include old home sites, as indicated by this chimney.

- **Investigate land-use tax assessment.**

Almost three-fourths of Virginia's counties allow land to be assessed according to its current land-use value rather than its fair-market value. The intent is to preserve open space in rural areas by helping landowners keep their land in forest or farm use. Land-use value assessments are usually much lower than the rates associated with fair-market value for real estate development.

Certifying Your Forest

If you have a multi-resource management plan and are implementing sustainable forestry practices, you may want to consider having your forest certified. Certification is a voluntary process that recognizes well-managed forests. Benefits of having your land certified include both recognition of your efforts to practice forestry in an environmentally responsible manner and, potentially, access to markets, which may seek wood from certified forests.

There are a number of certification systems available. In Virginia, the American Tree Farm System, administered by the Virginia Tree Farm Foundation (figure 12), and the Forest Stewardship Council offer internationally recognized certification programs for private woodland owners. Also, fiber from ATFS certified forestlands is recognized and considered certified content in the Sustainable Forestry Initiative's Chain-of-Custody Standard. Contact either program for information on how to certify your woodland.



Figure 12. Private landowners can certify their forests through the American Tree Farm System. Certification is a sign that sustainable management practices are being used on your property.

- **Consider a conservation easement.**

A conservation easement is a voluntary legal agreement by which a landowner conserves the agricultural, environmental, and open space value of the land in exchange for tax credits and deductions. With a conservation easement, a landowner relinquishes the right to develop the land intensively for residential, commercial, or industrial purposes to a state agency or land trust (figure 14). This ensures that the land will remain undeveloped into perpetuity. Conservation easements can, however, be written to allow traditional uses of the land, such as farming and timber harvesting. Tax advantages include state income tax credits, federal and state tax deductions, and reductions in estate taxes. The landowner maintains ownership of the land, which can still be freely sold or passed onto children; however, the limits on development stay with the land. The Department of Conservation and Recreation's Office of Land Conservation serves as a statewide clearinghouse for land conservation information.

- **Seek financial assistance.**

Financial or cost-share assistance is available to private forest landowners for many management activities, including reforestation, timber-stand improvement, streambank and forest road stabilization, and wildlife habitat improvement. Cost-share assistance can greatly offset your out-of-pocket expenses for forest and wildlife management activities. Most cost-share programs are administered by state and federal agencies. All programs have specific requirements such as minimum acreage, areas of application, water-quality protection, and length of time that you must maintain cost-share practices. Funding for programs is limited and programs may be added or dropped at any time. The VDOF can provide a comprehensive list of current programs.

State programs administered by the VDOF include the Hardwood Habitat Initiative, Reforestation of Timberlands, and the Pine Bark Beetle Prevention Program. The goal of the HHI is to help landowners improve the health and productivity of their hardwood forests. The goal of the RT program is pine reforestation of harvested lands. This

Environmental Regulations

As you implement your forest management plan, be aware that forestry activities must comply with local, state, and federal regulations. Because you are liable for activities occurring on your land, you need to be aware of how environmental laws impact your forest management activities, and you are encouraged to obtain professional advice prior to conducting any forest operation such as a timber sale. Outlined below are some frequently applicable environmental regulations.

Water quality

Excessive sediment and chemicals entering waterways resulting from forestry activities are subject to Virginia's Silvicultural Water Quality Law administered by the VDOF. If VDOF finds serious water-quality degradation, they may stop the harvesting job, require corrective action, and in extreme cases, institute civil penalties. In addition, Virginia's Debris in Stream Law requires that debris from harvesting activities such as treetops, logs, felled timber, and trash be removed from waterways to allow boats and fish unobstructed use of the water. Compliance with Virginia's forest BMP guidelines for water quality is generally adequate to meet requirements under the Federal Clean Water Act, which also requires proper steps be taken to prevent water pollution. A large portion of Virginia is in the Chesapeake Bay Watershed and is subject to regulations under the Chesapeake Bay Preservation Act (for more information contact the Virginia Department of Conservation and Recreation).

To prevent pollution resulting from forestry activities, management planning, and the proper installation of forestry BMPs, such as establishing forested riparian buffers (figure 13) can be effective. Surveys of harvests in Virginia indicate an overall BMP implementation rate of over 90%.



Figure 13. Hardwood seedlings can be planted along waterways to create a riparian buffer that protects habitat for aquatic species by keeping soil in place and keeping water temperatures cool by shading. Plastic tubes are often used to protect newly planted hardwood seedlings from wildlife browse and competing vegetation.

Burning

The burning of woody debris is the leading cause of forest fires in Virginia. Because woody debris in the forest dries out during winter months, fire danger is especially high during early spring before vegetation begins to leaf out. To prevent forest fires during this period, Virginia's 4 p.m. Burning Law states that from Feb. 15 through April 30, it is unlawful to burn debris within 300 feet of any material capable of spreading fire, except between the hours of 4 p.m. and midnight. In addition, other burning bans may be invoked during periods of extreme fire danger.

program can provide cost-share assistance for up to 75% of site preparation, tree planting, and stand improvement costs. Qualifying landowners must have a forest management plan developed by the VDOF or other approved forestry professional. The goal of PBBPP is to prevent and lessen the impact of bark beetle outbreaks. The program provides up to 50% cost-share assistance for thinning appropriate pine stands as a preventive measure (figure 15).

Most federal programs are administered by the Natural Resources Conservation Service, Farm Services Agency, and Soil and Water Conservation Districts. Major programs include the Conservation Reserve Program, the Conservation Reserve Enhancement Program, and the Environmental Quality Incentive Program. The primary goal of these programs is to protect wetlands and water quality, prevent soil erosion, and improve wildlife habitat and conversion of sensitive agricultural lands to streamside or riparian buffers. Some of these programs provide cost-share funds for approved practices and rental monies for converted agricultural lands. An approved conservation plan is required to qualify for any federal cost-share program and most practices must be maintained for 10 to 15 years.

Funding and requirements for cost-share programs change annually. Contact one of the management assistance agencies listed at the back of this publication for details.



Figure 14. A conservation easement limits subdivision of, and development on, properties and is a tool that can help protect forests. Conservation easements are forever, so they are not suitable for all landowners.

Educational Opportunities

An important part of sustainably managing your forest is educating yourself. You have already taken the first step by reading through this brochure. In Virginia, there are numerous other educational opportunities available. The following statewide programs are offered to loggers, landowners, and other interested parties to promote the sustainable management of the commonwealth's forest resources.

- **Logger education.**

Loggers are a critical link in the sustainability of our forest resources. An important component of promoting sustainable forestry practices is enhancing professionalism among timber harvesters, foresters, and others in the forestry community. Virginia's Sustainable Harvesting and Resource Professional Logger Program focuses on the training and continuing education of these professionals in using forestry BMPs during timber harvesting; compliance with environmental laws and regulations; forest regeneration and resource conservation; awareness of the Endangered Species Act and other wildlife considerations; logging truck and equipment safety; business management; and many other topics. For more information, contact the SHARP Logger Program Coordinator at the Virginia Tech Department of Forest Resources and Environmental Conservation or visit the [SHARP Logger website](http://sharplogger.vt.edu) (sharplogger.vt.edu).



- **Landowner education.**

The Virginia Forest Landowner Education Program offers programs for forest landowners on a variety of natural resource topics, including options for forest and wildlife management, resource assessment and planning, sources of financial assistance, timber sales and harvesting methods, BMPs, nontimber forest products, land-use conservation strategies, forest taxation, and legacy planning. The Beginning Woodland Owner Retreats introduce new woodland owners to the basics of sustainable forest management through class lectures, field trips, and hands-on activities.





Figure 15. At the landscape level, having a diversity of forest ages provides protection from insect and disease outbreaks, and provides a variety of wildlife habitats. There are a variety of cost share programs in Virginia to help landowners protect their forests.

For a complete quarterly listing of educational programs or more information, contact the VFLEP coordinator at the Virginia Tech Department of Forest Resources and Environmental Conservation or visit the [VFLEP website](http://forestupdate.frec.vt.edu) (forestupdate.frec.vt.edu).

The logger and landowner education programs listed are cooperatively sponsored by the many natural resource agencies and companies listed in this publication.

This introduction to sustainable forest management is meant to raise awareness of the options available to Virginia's forest landowners. Whether your goals are similar or very different from what has been presented in this brochure, the hope is that you have enough information to begin implementing sustainable forestry practices on your land. Virginia is fortunate to have a wealth of well-trained natural resource professionals available to assist private forest landowners with these practices. Feel free to contact any organization below to find out more about their services.

Sponsoring Agencies

[Sustainable Forestry Initiative Inc.](https://forests.org/)

(<https://forests.org/>)
2121 K St. NW Ste. 750
Washington, D.C. 20037
(202) 596-3450

Sustainable Forestry Initiative Inc. is an independent, non-profit organization responsible for maintaining, overseeing, and improving a sustainable forestry certification program that is internationally recognized and is the largest single forest standard in the world. The membership of the Virginia SIC consists of representatives from 19 companies and 2 state agencies that are major growers and producers of forest products in the commonwealth. The SIC supports landowner, logger, and public outreach and education.



[Virginia Cooperative Extension](https://ext.vt.edu)

(<https://ext.vt.edu>)
[Virginia Tech College of Natural Resources and Environment](https://cnre.vt.edu) (<https://cnre.vt.edu>)



[Virginia Tech Department of Forest Resources and Environmental Conservation](https://frec.vt.edu)

(<https://frec.vt.edu>)
313 Cheatham Hall (0324)
Blacksburg, VA 24061
(540) 231-5483

These state agencies administer the Virginia Forest Landowner Education Program and SHARP Logger Program, providing forestry, wildlife, and natural resource management information to forest landowners, natural resource professionals, and the public. Extension professionals conduct educational tours, meetings, and short courses on a variety of forestry and wildlife topics. They publish numerous natural resource themed Extension publications. All Virginia counties have local Cooperative Extension offices.

[Virginia Department of Forestry](https://dof.virginia.gov/) ([https://](https://dof.virginia.gov/)

dof.virginia.gov/)
Fontaine Research Park
900 Natural Resources Dr., Suite 800
Charlottesville, VA 22903
(434) 977-6555



The Virginia Department of Forestry is the state agency that provides forest management

planning and forestry information, seedlings and seed mixes for reforestation and wildlife, BMP guidance, and enforces water-quality, seed tree, and burning laws. The VDOF administers cost-share programs, and maintains lists of private forestry consultants, contractors, and timber buyers by county. The VDOF cooperates closely with other state and private resource agencies and companies to conduct education programs for loggers and landowners. Most counties have local offices.

[Virginia Forestry Association](http://www.vaforestry.org) (www.vaforestry.org)
3808 Augusta Ave.
Richmond, VA 23230-8733

(804) 278-8733



This private nonprofit membership organization represents Virginia's broad forestry community. The Virginia Forestry Association is active in legislative and regulatory issues affecting forestry and forest management, works with the media on forestry issues, sponsors forestry and environmental camps for school-age youth, provides general forestry and forest industry information, and assists members in interpreting regulatory requirements relative to forestry. Additionally, the VFA publishes Virginia Forests, a quarterly magazine on forest management and issues.

Other Relevant Agencies and Programs

[American Tree Farm System](http://www.treefarmssystem.org) (www.treefarmssystem.org)
c/o American Forest Foundation
2000 M. St. NW Ste. 550
Washington, DC 20036
(202) 765-3660

[Virginia Tree Farm Foundation](https://vtff.org/) (https://vtff.org/)

The American Tree Farm System is a private program of the American Forest Foundation with the mission to promote growth of renewable forest resources on private lands while protecting environmental benefits and increasing public understanding of all benefits of productive forestry. The ATFS is a nationally recognized certification system, and the oldest certification system

in the world. State ATFS committees bring foresters, consultants, and government agency officials together with experienced tree farmers to plan and administer each state ATFS program. The Virginia Tree Farm Foundation administers the tree farm program in Virginia.

[Forest Legacy](http://www.fs.usda.gov/managing-land/private-land/forest-legacy) (www.fs.usda.gov/managing-land/private-land/forest-legacy)

Forest Legacy Program and Community Forest Program Manager

U.S. Department of Agriculture Forest Service

1400 Independence Ave., SW

Code 1123

Washington, DC 20250

(202)205-1618

The Forest Legacy Program is a partnership between states and the USDA Forest Service developed to identify and protect environmentally important forests from conversion to non-forest uses. The main tool used for protecting these important forests is conservation easements. The federal government may fund up to 75% of program costs with at least 25% coming from private, state, or local sources.

[Forest Stewardship Council](http://us.fsc.org/en-us) (us.fsc.org/en-us)

708 First Street North, Suite 235

Minneapolis, MN 55401

(612) 353-4511

The Forest Stewardship Council's mission is to promote environmentally sound, socially beneficial, and economically prosperous management of the world's forests. The organization's vision is to meet current needs for forest products without compromising the health of the world's forests for future generations.

[Virginia Department of Conservation and Recreation](http://www.dcr.virginia.gov)

(www.dcr.virginia.gov)

600 E. Main St. 24th Floor

Richmond, VA 23219

(804) 786-6124

The Virginia Department of Conservation and Recreation is the state agency that works with Virginians to conserve, protect, and enhance their lands and improve the quality of the Chesapeake Bay and rivers and streams. The DCR promotes the stewardship and enjoyment of natural, cultural, and outdoor recreational resources (e.g. state parks), conserves natural areas, natural communities, "cave species, and

caves, coordinates statewide nonpoint source pollution control, ensures the safety of Virginia's dams, and, via the Land Conservation Office, provides statewide land conservation information.

[Virginia Department of Wildlife Resources](http://dwr.virginia.gov) (dwr.virginia.gov)
P.O. Box 90778
Henrico, VA 23228
(804) 367-1000

The Virginia Department of Wildlife Resources is a state agency that provides information, education, and technical assistance on wildlife management to forest landowners. The VDWR monitors wildlife populations, enforces hunting and fishing regulations, and provides technical assistance to federal agencies on cost-share programs for wildlife management practices on private lands. The agency is currently developing a comprehensive strategy for managing wildlife, including threatened and endangered species.

[Virginia Natural Heritage Program](http://www.dcr.virginia.gov/natural-heritage) (www.dcr.virginia.gov/natural-heritage)
[NatureServe](http://www.natureserve.org) (www.natureserve.org)
600 E. Main St.
Richmond, VA 23219
(804) 786-7951

The Virginia Natural Heritage Program represents a comprehensive effort to save Virginia's native plant and animal life and the ecosystems on which they depend through inventory, conservation information provision, protection, and stewardship. As a member of NatureServe, the VNHP contributes to an understanding of global diversity and helps to provide for the conservation and recovery of the earth's common, rare and endangered species and threatened ecosystems.

[Virginia Outdoors Foundation](http://www.vof.org) (www.vof.org)
39 Garrett St. Ste. 200
Warrenton, VA 20186

The Virginia Outdoors Foundation is a state-affiliated organization charged with the preservation of cultural and heritage lands in Virginia. VOF works with private landowners to establish voluntary conservation easements to protect farm and forestland.

Virginia Forest Facts

- Virginia is 62% forested (16+ million acres)
- Non-industrial private landowners own 59% (9.5 million acres) of Virginia's forestland
- Timber Investment Management Organizations, Real Estate Investment Trusts and non-forestry corporations own 21% (3.4 million acres)
- Forest industry owns 2% (322,000 acres)
- Public lands make up 18% (2.9 million acres)
- Over 500,000 acres in Virginia are certified to the SFI Forest Management Standard
- As of January 2022, 173,000 acres were certified to the American Tree Farm System certification standard
- Hardwood forests make up 80% of all Virginia timberland (12.9 million acres)
- Softwood forests make up 20% of all Virginia timberland (3.2 million acres)
- Total hardwood forest acreage increased from 8.1 to over 12 million acres since 1940
- Total softwood forest acreage has declined from 6.2 to 3 million acres since 1940
- Overall growth rates are exceeding removal rates
- Plantations account for 14% of Virginia's timberland and more than 50% of all softwood acreage
- Forestry contributes over \$21 billion annually to Virginia's economy
- Forests provide more than \$6.7 billion in ecological and societal benefits annually.
- Forestry provides more than 107,000 jobs in Virginia

[U.S. Fish and Wildlife Service](https://fws.gov/) (https://fws.gov/)
5275 Leesburg Pike, 2N035
Falls Church, VA 22041
(703) 358-2240

The mission of the U.S. Fish and Wildlife Service is to work with others to conserve, protect, and enhance fish, wildlife, and plants and their habitats for the continuing benefit of the American people. The USFWS is committed to a collaborative approach to conservation. Its strategy is to empower Americans to become citizen conservationists.

[USDA Forest Service](http://www.fs.usda.gov) (www.fs.usda.gov)
[Forest Stewardship Program](http://www.fs.usda.gov/managing-land/private-land/forest-stewardship) (www.fs.usda.gov/managing-land/private-land/forest-stewardship)
1400 Independence Ave. SW
Washington, DC 20250
(800) 832-1355

The mission of the USDA Forest Service, a federal agency of the U.S. Department of Agriculture, is “to sustain the health, diversity, and productivity of the nation’s forests and grasslands to meet the needs of present and future generations.” For over a century, the USDA FS has managed public land in national forests and grasslands, which currently total over 193 million acres.

Professional Foresters

Professional foresters are employed by government organizations, the forest industry, and private consulting companies. Foresters offer services to private landowners that may include management planning, forest inventories, harvest preparation and administration, and site preparation and reforestation. Landowners are advised to check the references and professional affiliations before choosing a forester. These references include membership in organizations such as the [Association of Consulting Foresters](https://www.acf-foresters.org/) (https://www.acf-foresters.org/) and the [Society of American Foresters](http://www.eforester.org) (http://www.eforester.org). Lists of professional foresters are available from your [local VDOF office](http://www.dof.virginia.gov) (www.dof.virginia.gov), ACF, and SAF.

Virginia Forest Fact Sources

- [Rephann, T.J. 2017. The Economic Impacts of Virginia’s Agriculture and Forest Industries. Weldon Cooper Center for Public Service, University of Virginia.](https://www.ag-forestry.virginia.gov/media/governorviriniagov/secretary-of-agriculture-and-forestry/pdf/ag_forestry_study_final_06_21_17.pdf) (https://www.ag-forestry.virginia.gov/media/governorviriniagov/secretary-of-agriculture-and-forestry/pdf/ag_forestry_study_final_06_21_17.pdf)
- [Virginia Department of Forestry. 2021. State of the Forest.](https://www.dof.virginia.gov) (https://www.dof.virginia.gov)

Resources for “Sustainable Forestry: A Guide for Virginia Forest Landowners”

This list, with live links, is available on the [Sustainable Forestry Initiative website](http://www.virginiasfi.org). (www.virginiasfi.org).

These resources correspond to the topics presented in the publication “Sustainable Forestry: A Guide for Virginia Forest Landowners.” This list is by no means all-inclusive, but it does provide a starting point for readers who are interested in finding more information on sustainable forestry. All links were correct at the time of publication. However, this addendum publication will be updated regularly on the Virginia SFI website, as the information changes.

- Sustainable Forestry/Sustainable Forestry Initiative/American Tree Farm System
- [Sustainable Forestry Initiative](http://www.forests.org/) (www.forests.org/)
- [American Tree Farm System](http://www.treefarmssystem.org/) (www.treefarmssystem.org/)
- [Virginia Tree Farm Foundation](http://vtff.org/) (vtff.org/)
- [Virginia Tree Farm Foundation Facebook page](https://www.facebook.com/VirginiaTreeFarmFoundation) (www.facebook.com/VirginiaTreeFarmFoundation)

Legacy Planning

- [Legacy Planning: A Guide for Virginia Landowners](https://ext.vt.edu/natural-resources/legacy-planning.html) (https://ext.vt.edu/natural-resources/legacy-planning.html)
- [Preparing for Generation NEXT on YouTube](https://www.youtube.com/playlist?list=PLOhBz_SGRw8Xp4dVPTsd0tIfSm1zhL1IS) (https://www.youtube.com/playlist?list=PLOhBz_SGRw8Xp4dVPTsd0tIfSm1zhL1IS)

Develop a Multi-Resource Management Plan

- [Natural Resources Conservation Service](https://www.nrcs.usda.gov/wps/portal/nrcs/site/va/home/) (https://www.nrcs.usda.gov/wps/portal/nrcs/site/va/home/)

- Go to website or call the state office at (804) 287-1691.
- [Sample management plan \(PDF\)](https://forestupdate.frec.vt.edu/content/dam/forestupdate_frec_vt_edu/resources/publications/management-plan-information/ForestStewardshipPlanTemplate.pdf) (https://forestupdate.frec.vt.edu/content/dam/forestupdate_frec_vt_edu/resources/publications/management-plan-information/ForestStewardshipPlanTemplate.pdf)
- [The Virginia Tree Farm Foundation](https://vtff.org) (https://vtff.org)
- [Virginia Department of Forestry area foresters](https://dof.virginia.gov/) (https://dof.virginia.gov/)
- Go to the website or call the central office at (434)977-6555.
- [Welcome to the Woods! A Guide for New Virginia Woodland Owners](https://www.pubs.ext.vt.edu/ANR/ANR-136/ANR-136.html) (https://www.pubs.ext.vt.edu/ANR/ANR-136/ANR-136.html)
- [Worksheet to help you work through the goal setting process](https://forestupdate.frec.vt.edu/resources/publications/familyresourceinventory.pdf) (https://forestupdate.frec.vt.edu/resources/publications/familyresourceinventory.pdf)
- [Dendrology at Virginia Tech](http://dendro.cnre.vt.edu/dendrology/main.htm) (dendro.cnre.vt.edu/dendrology/main.htm)
- [“Silvics of North America”](http://www.srs.fs.usda.gov/pubs/misc/ag_654/table_of_contents.htm) (www.srs.fs.usda.gov/pubs/misc/ag_654/table_of_contents.htm)
- Monitor the health of your forest
 - Identify symptoms of insect and disease using the [Bugwood Network](http://bugwood.org) (bugwood.org)

Harvesting Your Timber

- [Best Management Practices](http://dof.virginia.gov/water-quality-protection/logger-assistance/forestry-best-management-practices-bmps-for-water-quality) (dof.virginia.gov/water-quality-protection/logger-assistance/forestry-best-management-practices-bmps-for-water-quality)
- [Dealing with Timber Theft](http://www.pubs.ext.vt.edu/420/420-136/420-136.html) (www.pubs.ext.vt.edu/420/420-136/420-136.html)
- [Forest Landowner’s Guide to the Measurement of Timber and Logs](https://www.pubs.ext.vt.edu/420/420-085/420-085.html) (https://www.pubs.ext.vt.edu/420/420-085/420-085.html)
- [General harvesting information](http://dof.virginia.gov/forest-management-health/landowner-assistance/selling-timber/get-started-selling-timber) (dof.virginia.gov/forest-management-health/landowner-assistance/selling-timber/get-started-selling-timber)
- Know what timber you have to sell
 - [Find a forester](http://dof.virginia.gov/) (dof.virginia.gov/)
- Secure a written sale agreement
 - [Example of a timber sale contract](http://mylandplan.org/content/sample-timber-sale-contract) (mylandplan.org/content/sample-timber-sale-contract)
- [“So You Want to Sell Timber”](https://www.pubs.ext.vt.edu/content/pubs_ext_vt_edu/en/ANR/ANR-154/ANR-154.html) (https://www.pubs.ext.vt.edu/content/pubs_ext_vt_edu/en/ANR/ANR-154/ANR-154.html)
- [“Timber Selling Tips: Forestry Fact Sheet for Landowners”](http://www.pubs.ext.vt.edu/content/pubs_ext_vt_edu/en/ANR/ANR-155/ANR-155.html) (www.pubs.ext.vt.edu/content/pubs_ext_vt_edu/en/ANR/ANR-155/ANR-155.html)

Maintaining and Improving the Health of Your Forest

- Buy native species
- [Buy Virginia Trees](https://www.buyvatrees.com/) (https://www.buyvatrees.com/)
- Consider prescribed fire
 - [Virginia Department of Forestry](https://dof.virginia.gov/wildland-prescribed-fire/learn-about-wildland-and-prescribed-fire) (https://dof.virginia.gov/wildland-prescribed-fire/learn-about-wildland-and-prescribed-fire)
- Eliminate nonnative invasive species
 - “Native Alternatives to Invasive Plants” by C. Colston Burrell, available from most booksellers
 - [The Bugwood Network](https://wiki.bugwood.org/Archive:IPSF) (https://wiki.bugwood.org/Archive:IPSF)
 - [Exotic Invasive Plants](https://www.pubs.ext.vt.edu/420/420-320/420-320.html) (https://www.pubs.ext.vt.edu/420/420-320/420-320.html)
 - [Virginia Native Plant Society](http://vnps.org) (vnps.org)
- Learn to identify and plant tree species best suited for the site
 - [“Common Native Trees of Virginia and Common Native Shrubs and Woody Vines of Virginia.” Available from the Virginia Department of Forestry](http://www.shopdwr.com) (www.shopdwr.com)

Creating and Improving Wildlife Habitat

- [Virginia Department of Wildlife Resources](https://dwr.virginia.gov) (https://dwr.virginia.gov)
- [Timberdoodle](http://timberdoodle.org) (http://timberdoodle.org)

Conserving Special Sites

- [Virginia Department of Historic Resources](http://www.dhr.virginia.gov/registers/register.htm) (http://www.dhr.virginia.gov/registers/register.htm)
- [NatureServe](http://www.natureserve.org) (http://www.natureserve.org)
- [Virginia Natural Heritage Program](http://www.dcr.virginia.gov/natural_heritage) (http://www.dcr.virginia.gov/natural_heritage)

- [Forests of Recognized Importance](https://mylandplan.org/content/what-forest-recognized-importance) (https://mylandplan.org/content/what-forest-recognized-importance)

Forest Certification

- Forest Certification Programs
 - [American Tree Farm System](https://www.treefarmssystem.org) (https://www.treefarmssystem.org)
 - [Forest Stewardship Council](https://us.fsc.org) (https://us.fsc.org)
 - [Sustainable Forestry Initiative](https://www.forests.org) (https://www.forests.org)

Environmental Regulations

- [Virginia Forestry Laws and Regulations](http://dof.virginia.gov/laws/index.htm) (http://dof.virginia.gov/laws/index.htm)
- [Endangered Species Act](http://www.fws.gov/angered/laws-policies) (http://www.fws.gov/angered/laws-policies)

Financial Considerations

- [Taxes](http://www.timbertax.org) (http://www.timbertax.org)
- [Land Use Taxation](http://www.usevalue.agecon.vt.edu) (http://www.usevalue.agecon.vt.edu)
- [Conservation Easements](http://www.virginiaoutdoorsfoundation.org) (http://www.virginiaoutdoorsfoundation.org)
- [Cost-share](https://dof.virginia.gov/forest-management-health/forest-health/financial-assistance-program) (https://dof.virginia.gov/forest-management-health/forest-health/financial-assistance-program)

Education

- [Virginia Forest Landowner Education Program](https://forestupdate.frec.vt.edu/) (https://forestupdate.frec.vt.edu/)
- [Virginia Cooperative Extension](https://ext.vt.edu/) (https://ext.vt.edu/)
- [Webinar Portal for Forestry and Natural Resources](https://www.forestrywebinars.net) (https://www.forestrywebinars.net)



Virginia Cooperative Extension
Virginia Tech • Virginia State University