

There are many strategies to improve hardwood forests through intentional management. These include:

- Creation of a Hardwood Assessment Tool to establish a consistent method of forest inventory and assessment statewide to help professionals make data-driven recommendations.
- Training for professionals to ensure foresters, harvesters, and forest service providers are familiar with the techniques and activities needed for improved hardwood management.
- Development of demonstration sites to provide professionals with places to practice and learn, and landowners with visuals of what the techniques look like.
- Opportunities to educate landowners about hardwood management and realistic expectations of time and expenses.
- Development of more businesses to serve the needs of forests and forest landowners.
- Formation of financial assistance programs for landowners that offset the cost of forest management activities that take a long time to bring financial return.
- Engagement of groups who are interested in improved hardwood forest management.
- Finding ways for low value, renewable wood products to be profitably utilized.



The Hardwood Forest Habitat Initiative involves training service providers and Virginia Department of Forestry foresters (above) on how to implement techniques and activities needed for improved hardwood management. Photo by: Virginia Department of Forestry.

Once all these elements are fully implemented, intentional management will be the norm in hardwood forestry. When will all of this happen? We probably won't know until it is happening. There are strategies in the works already, but this is a problem of many chickens and many eggs! And nothing happens fast with hardwoods.

The Virginia Department of Forestry started by creating the Hardwood Assessment Tool, a Hardwood Stakeholders Advisory Group, training their own staff and service providers, completing several demonstration sites, and beginning a small cost-share program. What's been done so far is just a start, but every journey starts with a first step.

When I think about what success will look like for the Hardwood Forest Habitat Initiative, I think about the journey pine management has been on over the last 60 years.

It started with concern over a declining resource in the 1950s and 1960s. First, the Seed Tree Law was passed, requiring mature trees to be left until there was adequate pine regeneration. Next, several methods of site preparation were developed to help ensure successful regeneration (either from seed or planted), including bedding, windrows, drum chopping, burning, and chemical methods. Over the years, we began planting fewer and fewer pine trees to the acre because we improved survival and growth. Today, we plant seedlings with improved genetics, resulting in higher volumes and quality. Finally, and most importantly, today's landowners expect to do site preparation and replant pine seedlings after harvesting.

I see a day in the future when hardwood forest management is done as intentionally as pine management – preparing and establishing sites for new, young forests; final harvests of valuable timber; mid-rotation activities to improve growth and ensure survival of the best trees; and commercial thinnings. With active management, we will find that rotation times can be shortened (not as short as pine, but shorter than current hardwood rotations). I see this in the future, but to get there, we need to take steps together.

Together, through intentional management, we can ensure a productive hardwood resource for future generations. Forestry professionals in Virginia are stepping into this future. Are you ready to walk along with us?

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VIRGINIA FOREST LANDOWNER UPDATE

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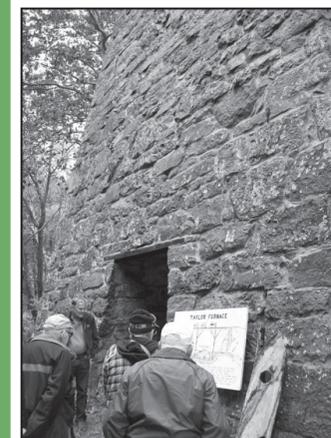
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Virginia's Future Hardwood Forests: Improvement Through Intentional Management
By: Joe Rossetti, Virginia Department of Forestry

Virginia's forests face many challenges, as described by Dr. Carter in the Spring edition of the Virginia Forest Landowner Update Newsletter (<https://forestupdate.frec.vt.edu/newsletter/archives.html>). However, a quick review of their history gives us hope. Virginia's forests have faced many challenges in the past and fortunately, they have shown much resilience.

Virginia was, at one time, just 20% forested. The forested areas were typically inaccessible because of steep slopes, rockiness, or swamps. Virginia is now about 62% forested. This means that 2/3 of today's forestlands had crops or cattle on them at some point in the last 150 years. Your forest probably had crops or cattle instead of trees.

The largest State Forests in south-central Virginia were worn-out crop lands when they were purchased from private landowners and made into State Forests. The first forestry assessment of them was that they were the worst sort of land, not suitable for growing anything. Today they are beautiful forests, growing their second or third generation of trees, and generating enough income through timber harvesting to be financially self-supporting.



Hardwood charcoal was used to fuel iron furnaces. It is estimated that it took an acre of wood (in the form of charcoal) every day to keep a furnace operating. Photo by: Jennifer Gagnon, Virginia Tech.

Many of Virginia's current hardwood forests were clearcut multiple times to supply wood to make charcoal used in iron production. Large amounts of fuel, in the form of harvesting residue (branches and limbs), and sparks from the trains used to extract the logs, meant that severe fires were frequent in these areas. Fortunately, harvests, fires, and abandoned agricultural land have resulted in today's naturally regenerated, beautiful, productive forests that are full of wildlife. I suspect that if we saw the farms and timber harvests of the early 1900s, we would be shocked and amazed that these areas became our current forests.

Of course, the historic factors that shaped the development of today's forests can't be repeated in the same way, nor should they be. But this history demonstrates that Virginia's forests are remarkably resilient and can thrive following disturbance.

Forest management was in its infancy in the United States in 1900. At that time, very little was known and documented about Virginia's hardwood forests. Today we have an

enormous volume of research by the USDA Forest Service, universities, and state forestry agencies on how our forests respond to changes. We do not know everything about every situation, but a great deal of information is available to forestry professionals.

Unfortunately, in many hardwood forests, this knowledge hasn't been widely accepted and applied to forest management. It is time to put this knowledge into action to help hardwood forests thrive and be productive for future generations. This is the goal of the Hardwood Forest Habitat Initiative - to improve hardwood forests through intentional management.



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EVENTS CALENDAR			For the most complete listing of natural resource education events, visit the on-line events calendar at https://forestupdate.frec.vt.edu		
Contact	Date	Location	Event	Time	Fee
DCR	July - Sept.	Virginia's State Parks	A variety of events and activities For a complete list, visit: www.dcr.virginia.gov/parks	Varies	Varies
MP	Year-round	Statewide	Virginia Master Naturalist Volunteer Basic Training*** Local Virginia Master Naturalist chapters hold basic training courses for new volunteers on various schedules. Visit http://www.virginiamasternaturalist.org/chapters-a-map-and-contacts.html for a map of chapters and information on training schedules and application procedures as they become available	Varies	Varies
15Forest	Alternate Fridays	Online	Fifteen Minutes in the Forest Join Virginia Cooperative Extension's Forestry Team (and their special guests) each Friday for a video on a natural resources-related topic. View previous videos on our YouTube Channel:	12:15	Free
BR PRISM	July 20	Online	Simply Stiltgrass - Blue Ridge PRISM Summer Meeting Join the PRISM Team to discuss all things Japanese stiltgrass from the latest research to effective control strategies.	11:30 - 1:00	Free Donations welcome
BR PRISM	Aug. 17	Online	Tree of Heaven and Spotted Lanternfly SLF is a relatively new nonnative invasive pest in Virginia that prefers to lay its eggs on the ubiquitous tree of heaven. Join this webinar to learn more about this relationship.	12 - 1:00	Free Donations welcome
KS	Aug. 26 & 27 Sept. 8, 9, 14 & 15 Oct. 27 Nov. 2	South Boston Online Galax Providence Forge	Preparing for Generation NEXT Legacy Planning Workshop What will become of your land after you are gone? Are your heirs involved in making these decisions? Join forestry, accounting, and legal professionals to learn how to talk to your family about planning for the future of your land. You'll gain skills to help you keep your land intact, in forest, and in the family.	Varies by program	Varies by program
JG/NC	Sept. 9-10	Providence Forge	SE Virginia Beginning Woodland Owner Retreat The Retreats were developed for those new to active woodland management. A combination of classroom, field trip, and hands-on activities will be used to teach concepts of sustainable woodland management.	Sept. 9 7:15 - 6 Sept. 20 7:15 - 1	No Lodging Individual \$65* Couple \$110** Lodging Individual \$105* Couple \$190**
AD JF/NC BW	October 7 October 28 October TBA	Powhatan Louisa Smyth	Fall Forestry & Wildlife Field Tours Join fellow woodland owners and natural resource professionals for a day in the woods. These county-based tours showcase sustainable woodland and wildlife management practices on private, public, and industry owned lands.	All day	TBA*
*Meals included **Meals and lodging included					

EVENT CONTACTS			
Contact	Name/Affiliation	Phone	e-mail/website
DCR	Virginia Department of Conservation & Recreation	804-786-6124	www.dcr.virginia.gov
MP	Michelle Prysby	434-872-4580	www.virginiamasternaturalist.org
15Forest	Fifteen Minutes in the Forest	ZOOM live: https://virginiatech.zoom.us/j/97509089739 YouTube: https://www.youtube.com/c/VirginiaForestLandownerEducationProgram Facebook live: www.facebook.com/VFLEP	
BR PRISM	Blue Ridge PRISM	https://blueridgeprism.org/	
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You Ain't from Around Here! Nonnative Invasive of the Quarter: Winged Euonymus (*Euonymus alatus*) By: Jennifer Gagnon, Virginia Tech

Orange and maroon are not only the colors of Virginia Tech and the Hokies, but also the dominant colors of fall in SW Virginia. And it just so happens, I love orange and maroon, the Hokies, and fall. They go together well. And the folks in charge of landscaping at Virginia Tech have made a concerted effort to landscape with species that are orange and/or maroon in the fall – particularly around Lane Stadium.

For example, there are varieties of red maple (*Acer* spp.) planted along Beamer Way, the road that passes directly next to the Stadium. They have vivid red and orange leaves in October, the heart of football season. They have also planted winged euonymus along many of the walkways around the Stadium. In the fall, the leaves are bright maroon, and the fruits are orange. It's as if it was made specifically for this purpose.

Unfortunately, winged euonymus, also known as burning bush, winged burning bush, corky spindletree, and winged spindle tree, is a nonnative invader. In the bittersweet family (*Celastrales*), winged euonymus is native to China, Japan, and northeast Asia and was introduced to the United States in the 1800s as an ornamental. By the 1970s, it was officially documented as an invasive species. Currently, it is found all along the eastern US, except Florida, and into the Midwestern States, and Wyoming.

Although winged euonymus is not as aggressive as other nonnative invasive shrubs (think autumn olive, *Elaeagnus umbellata*), the Department of Conservation and Recreation ranks it as highly invasive in Virginia. Like many nonnative invasives, winged euonymus is a prolific seeder; unlike many other nonnative invaders, winged euonymus can grow under a mature canopy in full shade. This means it can become a problem in mature, undisturbed forests, where we typically don't have problems with nonnatives. And not only is it shade-tolerant, it is also drought-tolerant, further increasing the sites it can grow on.

Winged euonymus invades forests, forest edges, pastures, prairies, and roadsides. Under ideal growing conditions, winged euonymus can form dense thickets, dominating the forest shrub layer, and out-competing native species. This species is spread primarily by birds that are attracted to the brightly colored fruits. Seeds can remain viable in the soil for many years. And of course, it is also spread by otherwise well-meaning landscapers.

How to Identify Winged Euonymus

Form: A dense, multi-stemmed, rounded shrub, up to 20 feet tall. More compact cultivars are also sold.

Leaves: Deciduous, arranged opposite to sub-opposite, elliptical to obovate (egg-shaped with the narrower part at the base) shaped. Leaves are 1.5 to 3 inches long and just over 1.25 inches wide. The edges of the leaves (margins) have fine teeth. Tops of the leaves are medium to dark green; bottoms of the leaves is slightly paler. They turn bright maroon in the fall.

Flowers: The tiny (less than 0.5 inch across) yellow-green flowers grow in groups of 3 directly on the stems. Flowers bloom in spring.

Fruit: The fruits are 0.25 to 0.3-inch-long capsules contained in a purplish-husk. The husk splits open when the capsules are ripe in the fall. Ripe capsules are a bright orange red.

Buds: Sharp and pointed, reddish brown.

Bark: Gray to gray-brown, splitting to reveal a lighter inner bark, causing it to look faintly striped.

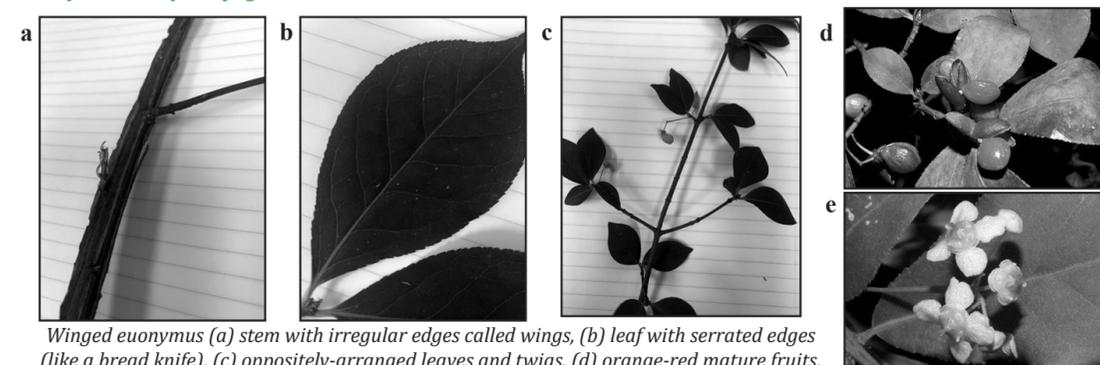
Stems: Vibrant green with raised tan or brown corky wings.

Native look a-likes: There are a few native plants that look like winged euonymus, including: bursting heart (*E. americanus*), burningbush (*E. atropurpureus*), and running strawberry bush (*E. obovatus*). However, all of these native species lack the wings on the stems. Sweetgum (*Liquidambar styraciflua*) twigs can have wings, but its leaves are shaped very differently.



Winged euonymus surrounds Lane Stadium on the Virginia Tech campus and displays bright maroon foliage in the fall. Photo by: Jennifer Gagnon, Virginia Tech.

Euonymus cont. from page 3



Winged euonymus (a) stem with irregular edges called wings, (b) leaf with serrated edges (like a bread knife), (c) oppositely-arranged leaves and twigs, (d) orange-red mature fruits, and (e) small yellow-green flowers. Photos a-c by Jennifer Gagnon, Virginia Tech; photos d-e from Virginia Tech Department of Forest Resources and Environmental Conservation.

Control: Fortunately, winged euonymus leafs out early in the spring and retains its leaves late into the fall. This makes it easy to see (especially the maroon leaves in the fall) and easier to control.

Chemical

Foliar: Since winged euonymus retains leaves for a long time, there is ample time each year to use foliar herbicide treatments. A backpack sprayer can be used to apply herbicide from mid-May through onset of fall color.

Basal bark: Herbicide treatments can be applied directly to the bark of winged euonymus year-round using an oil-based herbicide that can penetrate the bark and travel systemically through the plant. The entire lower 12-18 inches of the stem should be sprayed.

Cut stump: Herbicide treatments can be applied to cut stumps year-round. Oil-based herbicides can be applied to the cut stump surface and bark of the stump any time after stems are cut. Water-based herbicides must be applied to the cut stump surface immediately after stems are cut.

Manual

Small plants can be hand pulled, and a hoe can be used to remove most of the roots. Winged euonymus cannot recover from this type of disturbance. Mowing with a brush hog can reduce the height of the shrubs and make herbicide applications easier. Mowing alone will not control the plant.

Commercial

Don't buy nonnative invasive plants. Just because they are sold at a nursery doesn't mean they aren't invasive. I found winged euonymus listed on many gardening sites. To be fair, many of them state that it can be invasive, but then proceed to tell the internet how to plant and tend to it properly.

Reclamation

Once you have the nonnative invader under control, reclaim the site with native species as soon as you can. Native shrubby alternatives with bright fall foliage include: some of the native viburnums (*Viburnum* spp.), and dogwood species such as silky (*Cornus amomum*), gray (*C. racemosa*), and red stem (*C. sericea*). As an added bonus - both viburnum and dogwood shrubs provide valuable food and shelter for wildlife in addition to aesthetically pleasing foliage and flowers.

I suppose the lesson of this article is, although it's almost impossible to believe, not everything that comes in orange and maroon is good. But it does look awesome around Lane Stadium in the fall. If you're reading this in black and white, I encourage you to look at the color photos posted on the web version of this newsletter at: <https://forestupdate.frec.vt.edu/newsletter/current.html>

Resources:

- Applying herbicide using the cut stump method: <https://youtu.be/6zjb0tq15U0>
- Other methods of herbicide application: <https://youtu.be/Dh883U8G9NU>
- For specific herbicide recommendations, visit: <https://extension.psu.edu/burning-bush>

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