

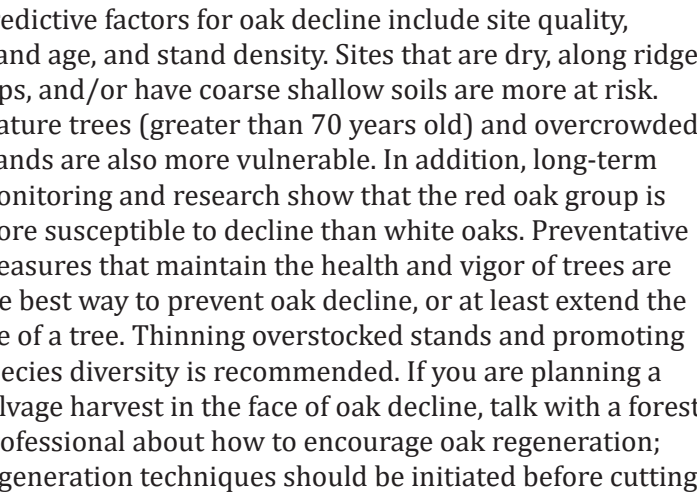
The left photograph is a low-angle shot looking up the trunk of a large tree. The trunk is thick and textured, with several large, dark, horizontal knots or scars. The branches spread out in all directions, some bare and some with small, dark leaves. The sky is visible through the canopy, showing some clouds.

The right photograph shows the same tree from a wider perspective. It is a tall, slender tree with a very large, rounded canopy. It stands in a grassy field. In the background, there are other trees, a fence, and a small building. The sky is cloudy.

that favor oaks should be utilized when possible, but even if these practices are employed, other factors such as invasive plants further complicate the matter. Our forests are changing just like they did centuries ago.

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our cohort of oaks reach mature ages, oak decline inevitable. Forest inventory analysis shows that the abundance of oaks in Virginia is decreasing, while species such as tulip-poplar and red maple are increasing in volume and number of stems. Silvicultural prescriptions

Useful Resources

Got an ash? The Virginia Department of Forestry is offering a 50% cost-share program to help landowners and organizations (non-profits, schools, HOAs, municipalities) treat their ash trees to prevent death by the emerald ash borer (EAB). To begin the application process, download the PDF describing the process from the Forest Health section here: <http://www.dof.virginia.gov/health/index.htm> and fill out Form 6.5 (<http://www.dof.virginia.gov/forms/index.htm>) with the help of your local forester. Keep an eye out for workshops in May 2018 discussing EAB (one is already scheduled for May 9 in Charlottesville - see the Events Calendar page 2), treatment options, and the cost-share program. If you know you have an ash tree and want details about the cost-share program, please contact Meredith Bean (EAB Coordinator), 434-220-9034, meredith.bean@dof.virginia.gov.

USDA Forest Service.

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VIRGINIA FOREST LANDOWNER EDUCATION

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Events, news, and information promoting the stewardship of Virginia's forest resources.

VIRGINIA FOREST LANDOWNER EDUCATION PROGRAM

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Oak Decline in Virginia

By: Lori Chamberlin, Virginia Department of Forestry

Why are my oaks dying? This is one of the most common questions we receive in the Virginia Department of Forestry's Forest Health Program. If we're lucky, there is an obvious answer such as defoliation by an invasive insect or chemical damage by herbicide sprayed on adjacent crops. Nine times out of ten, however, the answer is not so easy and this is when we reference "oak decline."

In order to understand our current oak forests, we need to look back at what has changed over the last few centuries. Prior to the 1900's, central hardwood forests were subjected to frequent burning, either natural or human-induced. Since oaks have traits that make them more resilient to fire, they were able to out-compete other tree species less well-adapted to fire. Then, at the turn of the twentieth century, many cultural practices changed and fire suppression policies significantly reduced forest fires. Open woodlands that had been maintained by fire, livestock grazing, and harvesting became more closed as oaks in the understory were able to reach canopy positions in the absence of these frequent disturbances. Our forests today contain these mature 80- to 100-year old oaks with dense woody understories where more shade-tolerant and fire-sensitive tree species are favored.

When cohorts of aging oaks die in high numbers it's alarming, but this trend has actually been happening for many decades. As reported in the USDA's 1971 *Diseases of Forest and Shade Trees of the United States* agriculture handbook, "The 'sturdy oak' in certain decades and certain areas, has revealed a marked tendency to decline and die in situations and on a scale that has caused much bafflement and concern." A review by Millers *et al.* (1989) reports 57 episodes in the eastern U.S. between 1856 and 1986 where oak mortality was higher than expected. So while it may seem like oaks in Virginia are suddenly dying in significant numbers, oak decline has been a trend for some time.

We define "oak decline" as the gradual failure in the health of a tree that results from the interaction among three groups of stress factors: predisposing, inciting, and contributing. **Predisposing** factors weaken the tree over time and often have to do with site conditions such as poor soil, topography, and stocking density. Advanced tree age and prolonged periods of drought are also common predisposing factors in Virginia. These factors reduce the tree's ability to fight off insect and disease pests and make them more susceptible to future disturbances. **Inciting** factors such as frost, drought, or defoliating insects are more short-term. They rarely kill the tree outright, but usually initiate decline by reducing growth, depleting the tree's stored food reserves, and/or causing dieback. Long-term studies show that drought events are key inciting factors and oak response to drought can last up to 10 years. Finally, **contributing** factors are secondary insects or diseases that ultimately lead to tree mortality. These are the agents that finally "do the tree in" and are often blamed for the death of the tree when in fact they are just the last nail in the coffin. Common contributing factors in Virginia are *Armillaria* root rot and the two-lined chestnut borer, a fungus and wood borer, respectively, that only attack trees already in an advanced state of decline.

So you can see why the answer to the question, "Why are my oaks dying?" can be very complicated. Your dead oak may be infected with *Armillaria* root rot, but that's not what killed the tree; it was just a contributing factor. Your oak may have been defoliated by gypsy moth, but that was just an inciting factor that initiated decline. Old age and prolonged drought many

Oaks cont. on page 5

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	April, May, & June	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	State-wide	Virginia Master Naturalist Volunteer Basic Training www.virginiamasternaturalist.org/chapters.html	Varies	Varies
PRISM	April 10 or May 15	Charlottesville	Invasive Plant Identification and Treatment Methods Learn: 1. to identify and treat some of the most common invasives, 2. pros and cons of different control methods, 3. sources of assistance and supplies, and 4. availability of additional trainings and information.	6:30 - 8:30	\$20
VFA	May 2-4	Richmond	VA Forestry Summit: Brilliant Achievements, Bold Horizons Join loggers, landowners, and foresters to celebrate VFA's 75th anniversary. Participate in sessions for landowners & industry members and Tree Farm Inspector and PLT Trainings.	Varies	Varies
VCE	May 6	Madison	Shiitake Mushroom Growing Demonstration Learn how to grow your very own at this open-house demonstration at the Madison Farmer's Market.	8 -11:30	Free
NC	May 8	Purdy	Quail Management Workshop Acquire the latest information on new developments in quail ecology and advancements in management techniques. This workshop will be indoors in the morning, with a field tour of a successful landowner's project in the afternoon.	9 - 3:30	Free*
MB	May 9	Charlottesville	Emerald Ash Borer Management Workshop Learn what resources are available to homeowners, woodland owners, and non-profits with ash trees.	1- 4:00	Free
JG	May 10	Wakefield	Prescribed Burning on Private Lands Learn why and how to use prescribed fire on your land and gain hands-on burning experience.	9 - 5:00	\$15*
JH	May 10 & 17 or May 12	Potomac Falls Leesburg	Backyard Woods Workshop Small lots are a big deal. The vast majority of landowners in Virginia own less than 10 acres. By enhancing wooded areas or creating natural areas on your lot, you can enjoy recreation, aesthetics, wildlife, and improved water and air quality. Owners of even just a few acres can make a positive difference in their environment.	6 - 9:00 9 - 2:00	Free*
PECVA	May 10 or May 16 or May 22	Ruckersville Waterford Middleburg	Sources of Conservation Funding Workshop There are a wide variety of land management and land conservation programs offered by private non-profit organizations as well as local, state, and federal conservation agencies. Please join the Piedmont Environmental Council & partners for a comprehensive overview of programs.	6 - 8:00 5:30 - 7:30 5:30 - 7:30	Free*
HC	May 19-20	Duffield	Forest Farmer Field Day Tour the Appalachian Harvest herb hub and discuss the economics of cultivating forest-grown medicinal herbs. After lunch, tour Ryan Huish's farm to learn about his plans for cultivating forest herbs and site selection.	All day	\$15*
JMM	July 15	Montpelier Station	Working Woods Walk Venture into the Montpelier Demonstration Forest on a two-hour hike with experts in forest conservation. Learn about conservation and cultivation strategies that generate mutual benefit to humans and nature.	2 - 4:00	\$5
JG	Aug. 17-19	Abingdon	SW Virginia Beginning Landowner Retreat Is woodland management a new concept for you? If so, come spend the weekend with fellow forest owners and natural resource professionals and learn how to get started.	Sat. 8:00 a.m. - Sun. 1:00 p.m.	Varies*
If you are a real estate professional or Commissioner of the Revenue, please visit the Landowner Update website for a schedule of our continuing education classes, Real Forestry for Real Estate. (https://forestupdate.frec.vt.edu).					
*meals included; **meals and lodging included			<i>Event Contacts on page 4</i>		

You Ain’t From Around Here! Exotic Invasive of the Quarter:
Porcelain-berry (*Ampelopsis glandulosa* var. *brevipedunculata*)
Jennifer Gagnon, Virginia Tech



Porcelain-berry forms dense mats, covering up native species, and resulting in a mono-culture.
Photo by: Steve Manning, Invasive Plant Control.

edible. I’ve not tasted the berries, but they are generally considered not very palatable to humans. But the birds like them. And an on-line resource center for edible and otherwise useful plants attributes some medicinal properties to the fruits, roots, and leaves, including treatment of clots, boils, abscesses, ulcers, and aches.

Porcelain-berry is native to Japan, China, Korea, and eastern Russia. Since its introduction, it has spread from New England to North Carolina, and west to Michigan and Ontario. It can currently be found in 10 counties in Virginia, including Albemarle, Arlington, Chesterfield, Fairfax, Frederick, Goochland, Henrico, Loudoun, Prince William, and Westmoreland.

Virginia’s Department of Natural Heritage lists it as a highly invasive species. It grows rapidly and is fairly resistant to diseases and insects. This woody vine forms dense mats that shade out native species and out-compete them for water and nutrients. It spreads by seeds (with the help of birds).

Porcelain-berry grows best in moist, slightly shady areas along stream banks and in thickets. But it is an adaptable species and can also be found growing on dry soil and in full sun. The vine is less tolerant of heavy shade and permanently wet soils.

How to Identify Porcelain-berry
Form: Deciduous, woody, climbing vine. Young twigs are hairy, bark has lenticels (white spots) and does not peel. Vines climb with tendrils that grow opposite the leaves on the stems, 15-20 feet long.
Leaves: Three to five deep lobes, resembling grape leaves. Alternately arranged, sometimes variegated with hairy undersides. Edges of mature leaves are toothed. Can exhibit high variability in shape, including smooth edges.

“DO NOT, I REPEAT DO NOT BUY THIS PLANT!!! And if you see your local nurseries selling it please notify them that it is a INVASIVE MONSTER. IF YOU CAN IDENTIFY IT, RIP OR CLIP IT. Regardless of your zone, do not even take the chance. Here in the New England/ Tri-State area it is wreaking havoc and displacing thousands of acres of native, beautiful habitat EVERY YEAR. It is utterly horrifying to myself (a botanist and horticulturist). Sure it might not seem so bad on your trellis, but keep in mind that the birds will eat the berries and drop them to another spot which exponentially increases their numbers. The seed passing through the birds’ gut actually increases the germination rates by helping to remove the dormancy inhibitors naturally found in the seed (same with Asiatic bittersweet). DO NOT BUY THIS PLANT. DO NOT HELP IT SPREAD, IT NEEDS NO HELP. There are plenty other beautiful NATIVE vines anyways.” On Sep 16, 2014, Eudai67 from Hamden, CT.

This consumer review from a gardening site that sells porcelain-berry pretty much says it all. As with many exotic invasive species, there is a confusing mix of information on the internet. On another gardening website, they provide useful tips for growing porcelain-berry. And, while at the end of the article they recommend checking with the local Extension office to see if it is invasive in your area, they will still sell it to you anyway (except for Massachusetts where it is prohibited).

While I’ve never seen this species in person, looking at photos, I can understand why porcelain-berry was introduced to the United States in the 1870’s as an ornamental bedding and screening plant. This climbing vine has spectacular multi-colored berries that don’t even look real. It forms dense vine thickets that provide privacy and create lovely arbors.

Being in the same family as grapes, the berries and cooked leaves are



The striking multi-colored fruits of porcelain-berry, as well as its ability to create dense screen-forming mats, make it popular in commercial horticulture. *Photo by: Nancy Lowenstein, Auburn University.*



Map of confirmed instances of porcelain-berry in Virginia. Map from USDA PLANTS.

Porcelain-berry cont. from page 3

Flowers: Tiny, greenish-yellow, fading to white in mid-summer. Grow in cymes (flat-topped flower cluster with innermost flowers opening first, free petals), opposite the leaves.
Fruit: Clusters of shiny, hard, porcelain-like berries in various shades of white, yellow, lilac, or green that mature to a bright turquoise in September through October. Berries are ¼ inch in diameter and contain 2-4 seeds. All colors can be found on a single fruit cluster at one time.
Pith: (center portion of the stem) is white and continuous across the nodes.
If you think you have this species on your property, before embarking on a control project, please make certain you aren’t confusing it with some of the native plants it resembles. Porcelain-berry is closely related to the native fox grape. Fox grape has a brown pith (instead of white), no lenticels on the bark, and the bark shreds and peels. Also, the fruits hang downwards, like the traditional grape clusters we are accustomed to.



From left to right: Porcelain-berry’s unripe fruits, smooth-shaped leaves, and more common lobed leaves.
Photos by: (fruits) Leslie J. Mehrhoff, University of Connecticut, and (leaves) Karen A. Rawlins, University of Georgia.

How to Control Porcelain-berry
Manual: While it is possible to hand-pull the vines, they have extensive root systems that intertwine with the roots of desirable species, making manual eradication difficult. If you attempt hand-pulling, do it in the fall or spring, which will prevent flowers from forming the following season. Always pull before fruits appear. You may leave the pulled vines on-site, allowing them to decompose and return nutrients to the soil. If you have a dense thicket of porcelain-berry, be aware that there may be native species you want to protect growing underneath.
Chemical: Spot application of glyphosate to individual plants towards end of growing season is the most effective means of chemical control. But be careful to protect desired species, as glyphosate is a non-specific herbicide, and will kill all vegetation it comes in contact with. And, as with all invasive species control projects, regular monitoring is necessary to remove future infestations.
Commercial: One of the main problems with controlling porcelain-berry is that it is still popular in the horticultural trade. The most effective means of control is to remove it from commercial trade and promote native species that fill the same gardening niche. Good native alternatives include trumpet creeper (*Campsis radicans*), trumpet honeysuckle (*Lonicera sempervirens*), and devil’s darning needles (*Clematis virginiana*).

Jennifer Gagnon is an Extension Associate in the Department of Forest Resources and Environmental Conservation, jgagnon@vt.edu, 540/231-6391.

EVENT CONTACTS			
Contact	Name/Affiliation	Phone	e-mail/website
DCR	Virginia Department of Conservation & Recreation	804/786-1712	www.dcr.virginia.gov
MP	Michelle Prysby	434/872-4580	www.virginiamasternaturalist.org
PRISM	Blue Ridge PRISM	http://blueridgeprism.org/	
VFA	Virginia Forestry Association	804-278-8733	http://vaforestry.org
VCE	Madison County VCE	540-948-6881	kjenk@vt.edu
NC	Neil Clark	757-653-2572	neclark@vt.edu
MB	Meredith Bean	434-977-5193	meredith.bean@dof.virginia.gov
JG	Jennifer Gagnon	540-231-6391	jgagnon@vt.edu
JH	Jim Hilleary	703-777-0373	jim.hilleary@vt.edu
PECVA	Piedmont Environmental Council	434-977-2033	www.pecva.org
HC	Holly Chittum	hollykc@vt.edu	
JMM	James Madison’s Montpelier	www.montpelier.org	