

Women cont. from page 1

is important in conservation and that they should take pride in their ideas and be a leader in their land conservation goals."

The Virginia DOF communications team set up a video booth at the workshop to provide landowners with the opportunity to share their stories about the land. Participants also toured a property owned and operated by Linda Ragsdale and her husband to view conservation practices on the ground.

The May workshop capped off a three-day training program called the Women and Land Conservation Learning Circle, sponsored by AFT from June to November 2015 in Dinwiddie. This program builds off a home-grown Virginia DOF effort that held regional conservation workshops for agricultural and forest landowners from 2008-2012. Heather Dowling, Dinwiddie County's Area Forester, started the original women-centric effort to address a need she saw for more information and fellowship among women in her county who were facing big decisions with little support.

These Conservation Learning Circles, developed by the Women and Food Agricultural Network (www.wfan.org), consist of groups of 15-20 local women who come together for facilitated discussions with female conservation professionals. The conversations inspire participants to build partnerships with resource management agencies, land trusts, and others to protect their land and water resources. The peer-to-peer discussion atmosphere provides women with a unique opportunity to learn from each other as well as become more knowledgeable and confident about conservation issues, practices, and programs. The participants' questions and interests drive the conversation as the technical staff educate about best practices and available resources in soil and water conservation. Discussions also cover land leasing and passing land on to the next generation.

"The circle gave me empowerment to do things on the farm. I now feel like it's my farm." A Learning Circle participant who later placed a conservation easement on 530 acres of her land.

According to the Iowa-based Women, Food and Agriculture Network, more than 50 percent of the women who attend the sessions take a conservation action within six months of completing the Learning Circle.

AFT is keenly interested in this work nationally and is sponsoring Learning Circles in several states. Upcoming Circles in Virginia are planned to start in February in Augusta County and in March in Rockingham County. AFT believes that rethinking traditional approaches to conservation and refocusing outreach policies and programs specifically targeted for women landowners are essential to keeping working lands in production.

Additional information about "Women and Land" and upcoming events can be found at www.farmland.org. Additional support for the Women and Land program comes from the Prince Charitable Trust, Virginia Environmental Endowment, the Virginia Department of Forestry, the USDA Forest Stewardship Program, and the Estate of Wendy Joan Shadwell.

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Jim Baird is the Mid-Atlantic Director of The American Farmland Trust, jbaird@farmland.org, 202/378-1235.

Be Safe; Be Firewise

The recent drought and the subsequent wildfires present a good opportunity to remind everyone that when it comes to woodland management, fire can be a friend and a foe. In the Summer 2015 edition of the Virginia Forest Landowner Update, we featured an article on how to develop a plan to protect your property from wildfires. That article was followed up in Fall 2015 with one on how to use fire as a tool to manage your woodlands and keep them healthy. Both of these articles can be found on the VFLU archived newsletter page: <http://forestupdate.frec.vt.edu/newsletter/archives.html>. For more information on how to make your landscape Firewise, visit: <http://dof.virginia.gov/fire/firewiseva/>.

Virginia's Century Forest Program

The Summer 2016 edition of the VFLU included a write-up about Virginia's new Century Forest Program. This program recognizes Virginia families whose properties have been in the same family for 100 years or more, include at least 20 contiguous acres of managed forests, are lived on or managed by a descendant of the original owners, and have a documented history of timber harvests or other forest management activities.

In November, 23 families from across Virginia were granted this recognition. Congratulations to all! Please visit: <http://augustafreepress.com/virginia-families-honored-century-forest-landowners/> for a complete list of families. If you believe your property qualifies, please contact the Century Forest Program at: CenturyForests@dof.virginia.gov.



Heather Dowling, Virginia DOF, discusses forest management at the Woman and Land workshop. Photo by: Lisa Deaton, VDOF

VIRGINIA FOREST LANDOWNER UPDATE

WINTER 2017

VIRGINIA
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INSIDE

1
**Women Landowners
Network and Learn
About Conservation
Stewardship**

2
Events Calendar

3
**You Ain't From
Around Here!
Exotic Invasive
of the Quarter:
Brown Marmorated
Stink Bug**

5
Be Safe; Be Firewise

**Virginia's Century
Forest Program**

6
Useful Resources



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VIRGINIA FOREST LANDOWNER UPDATE

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

Winter 2017

Women Landowners Network and Learn About Conservation Stewardship
By: Kim Woodwell and Jim Baird, American Farmland Trust

While women have always been a critical part of farming and land stewardship, with our aging rural population, they are now becoming landowners in unprecedented numbers. As new operators, widows, or inheritors of land, women are taking on roles as owners and decision-makers. This trend is expected to continue over the next two decades, with approximately 240 million acres of land predicted to change hands, and much of it transferred to women.

Despite increasing in number, women remain underserved by programs that provide landowners with the resources to be successful stewards of the land. According to a USDA report, *Farmland Ownership, Tenure, and Transfer* (2016), women, particularly non-operating landowners, tend to interact less frequently with conservation resource agencies and often lack confidence in their knowledge and ability to make decisions about production and management.

As women become significant decision-makers nationwide their actions will exert a major impact on the health of our natural resources and our economy. While the data on women landowners is generally scarce, recent data collected by American Farmland Trust, the USDA, and others indicate that women landowners can be strong conservation partners. They tend to take a long-term view of their land and see it as a valuable community asset that should be protected. They have a strong stewardship ethic and a desire to transition their land to the next generation. These attributes make women ideal partners in conservation and land protection, and highlight the need for gender-specific support, education, and tools to help this growing and powerful new constituency succeed.



Participants in the Dinwiddie Conservation Learning Circle share thoughts about management issues.
Photo by: Kim Woodwell, AFT.

American Farmland Trust (AFT) has recognized this as a unique opportunity and since 2011 has been working to develop a national program that includes research, training, evaluation data and outreach approaches to expand the effort to engage and empower women landowners.

The "Woman and Land Workshop" held on Friday, May 6, 2016, was part of AFT's outreach effort. In partnership with the Virginia Department of Forestry (DOF) in Dinwiddie County, a one-day workshop was organized for women landowners. A key theme at the workshop was exploring how emotional attachment to the land can be both a value and a barrier when making land management decisions. Speakers described strategies that landowners can use to increase their confidence to set and achieve conservation goals. Additional discussion topics ranged from taxes to wildlife management. Female conservation professionals from the Virginia DOF, Soil and Water Conservation Districts, Farm Service Agency, Virginia Cooperative Extension, and the Virginia Department of Game and Inland Fisheries (DGIF) answered questions and shared information about financial and technical resources.

Katie Martin, District Wildlife Biologist with the Virginia DGIF, said it was exciting to be a part of a workshop designed to empower women to play a leading role in decision-making on their land. "This [Women and Land] is exactly the type of meeting we need to show these landowners that their voice



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| Virginia Cooperative Extension Virginia Tech • Virginia State University www.ext.vt.edu | | | | |
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| EVENTS CALENDAR | | | For the most complete listing of natural resource education events, visit the on-line events calendar at http://forestupdate.frec.vt.edu | | |
|---|--|--------------------------------|--|---------------------------|----------------------------------|
| Contact | Date | Location | Event | Time | Fee |
| DCR | Jan, Feb., & March | 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 |
| EP | Jan. - nominations June - camp | Appomattox | The 71st Holiday Lake Forestry Camp Nominations will open in early January. Details and forms can be found at www.dof.virginia.gov . Teens will learn skills in forestry and other natural resources. Forestry Camp is open to Virginia residents aged 13-16 who have not attended before. | All week | Varies |
| CASA | Jan. 12 | Hyattsville, MD | Farming the Forest This pre-conference workshop at the CASA Future Harvest Conference will provide information on how to grow forest crops such as ginseng, golden seal, and others -- with an overview of forest farming concepts, potential markets, value-added products, policies, and more. | 1:30 - 4:30 | \$56 |
| WWF | Jan. 20-22 | Virginia Beach | Winter Wildlife Festival Learn what it takes to properly observe and identify wildlife in their natural settings. | All weekend | Varies |
| AD | Feb. 25 | Culpeper | 13th Annual Woods & Wildlife Conference Join Virginia Cooperative Extension and partners for a full day of presentations and workshops geared to help both large and small acreage landowners become better stewards. | 8:30 - 4:30 | \$45*/person; \$80*/couple |
| JG | March 17-19 | Appomattox | Central Virginia Beginning Landowner Weekend 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. A combination of classroom talks, field tours, and hands-on experiences will provide you with the basics. | All day Saturday & Sunday | Varies** |
| JF | March 23 March 30 April 6 | Lynchburg Monroe Bedford | Emerald Ash Borer and Other Tree Pests - Woodlot Series Join VCE and Bartlett Tree Experts at one of these three locations to get an update on the status of the emerald ash borer and how to protect your ash trees. | 10 - 3 | \$10*/person; \$15*/household |
| VFA | May 3-5 | Roanoke | 2017 Virginia Forestry Summit: What's New Now? Join fellow landowners, natural resource professionals and loggers at this annual event. A special landowner track and a field trip will focus on topics useful to private woodland owners. | Varies | Varies |
| JG | Aug. 18-20 | Abingdon | Southwest Virginia Beginning Landowner Weekend Retreat See description above. | All day Saturday & Sunday | 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. (http://forestupdate.frec.vt.edu). | | | | | |
| *meals included; **meals and lodging included | | | | | |
| 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 | | |
| EP | Ellen Powell | 434/977-6555 | ellen.powell@dof.virginia.gov | | |
| CASA | Chesapeake Alliance for Sustainable Agriculture | | https://www.futureharvestcasa.org | | |
| WWF | Winter Wildlife Festival | 757/385-2990 | VBGov.com/winterwildlife | | |
| AD | Adam Downing | 540/948-6881 | adowning@vt.edu | | |
| JG | Jennifer Gagnon | 540/231-6391 | jgagnon@vt.edu | | |
| JF | Jason Fisher | 434/476-4147 | jasonf@vt.edu | | |
| VFA | Virginia Forestry Association | 804/278-8733 | vfa@vaforestry.org | | |

You Ain't From Around Here! Exotic Invasive of the Quarter: Brown Marmorated Stink Bug

Jennifer Gagnon, Virginia Tech

The brown marmorated stink bug (BMSB) is an exotic invasive that has been in Virginia for quite a while now. I've put off writing about it because I traditionally focus on exotic invasives that damage forests. However, I suspect many woodland owners are like me, and not only have woods, but also have gardens and/or orchards. In which case, the BMSB is probably bugging you, even if it's not directly impacting your forest trees.

The other reason for my writing about BMSB is this was our first fall living on our woodland property – in an 1845 cabin. Which, as you might imagine, is far from hermetically-sealed. For a couple of months now, my husband, along with his ever-trusty Oreck hand-held vacuum, has been engaged in a battle with a ceaseless parade of BMSBs climbing in through the cracks. This battle is taking a toll on him - he has started laughing maniacally when they sense the vacuum approaching and try to scramble under the curtains. Because the vacuum always wins. Yet they keep coming. Watching his slow descent into BMSB-induced madness inspired me to learn more about his enemy.

Native to China, Japan, and South Korea, BMSB was accidentally introduced near Allentown, PA around 1996. Recent DNA analyses reveal these introduced BMSBs originated from a native population in Beijing, China. BMSB made its way to Virginia in 2004 and was found throughout most of the commonwealth by 2010. Both Asia and the US have native stink bug populations. Many of these, even though native, are considered agricultural pests.

Damage

Indoors - BMSBs don't like the cold. And while some do overwinter in dead standing trees, many spend the winter in our cozy homes. Typically, the infestation begins the first cold day in September with the bugs entering through cracks and crevices. Infestations can be up to 26,000 bugs in a single home. Fortunately, BMSBs do not mate, lay eggs, or feed indoors. They come inside simply to hibernate, although they will be active on particularly warm days. So if you can obtain some level of Zen with these critters (much like I try to do with I-81), you can cohabit with them quite nicely. Of course, as my story about my husband demonstrates, not everyone can achieve this.

Things are a little different for business owners. BMSB may cause economic damage for businesses such as hotels and restaurants. Guests are not always happy to have bugs flying around their rooms at night or crawling on their dinner tables.

And let's not forget the stink! As a defensive mechanism, BMSBs release an odor from their stink glands, located on the underside of their bodies between the first and second pairs of legs. I think it smells like very potent citronella. Many describe it as smelling like cilantro. Interestingly, two of the compounds present in the odor are commonly used as food additives in bakery and dairy products.

My poor brother, who lives in Florida, was up visiting this fall and made the mistake of mentioning that he had never smelled a stink bug; something I quickly remedied by squeezing one in his face. He was not amused.

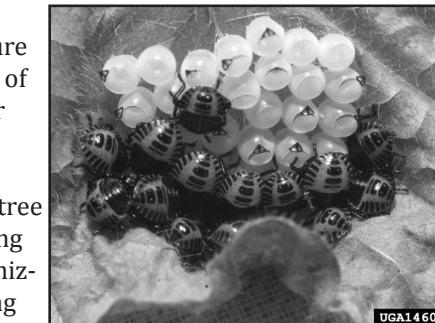
Outdoors - BMSBs are polyphagous – meaning they use many different species as host plants. In fact, they can use 100 different host plants, including apples, soybeans, tomatoes, peppers, sweet corn, sunflowers, and even hardwoods. They prefer to feed on reproductive structures and will move from one host species to the next as the growing season progresses. For example, a typical seasonal progression of BMSB feeding might be: emergence from over-winter dwelling (your house) – berries – tomatoes/apples – field crops (such as sweet corn). Typically crop edges are the first, and most severely, impacted areas. As such, BMSBs are known as perimeter invaders.

BMSBs are sucking insects. To feed, they insert a straw-like mouthpart into a fruit or vegetable, and their digestive juices destroy the cells they contact. This causes sunken spots on fruit, white spots (halo spots) on peppers and tomatoes, aborted kernels on corn, and twisted okra pods. This damage decreases the value of the product in the marketplace. In Virginia, most of the economic damage has been on apples and peaches. In fact, in 2010, the Mid-Atlantic apple industry lost \$37 million due to BMSB damage.

BMSB cont. from page 3

How to Identify the BMSB

Most of us know a BMSB when we see one in our house. No doubt about it. However, as I mentioned earlier, out of doors we have native stink bugs, some of which look similar. BMSBs are grayish-brown shield-backed bugs about $\frac{3}{4}$ " long with white bands on their antennae and legs, and alternating black and white spots on their abdomens. The stripes on the antennae are the best clue for properly identifying a BMSB – other stink bugs do not have these. Another good clue is their shoulders. The BMSB has a smooth shoulder, while similar-looking native stink bugs have serrated shoulders.



Triangular pattern of eggs on underside of a leaf (top) and newly hatched nymphs (bottom). Photos by: David R. Lance, USDA APHIS.

Life Cycle

When BMSBs emerge from our homes in the spring, the females become reproductively mature within 1-2 weeks, at which time they begin mating. Females lay their eggs on the undersides of leaves in triangular-shaped masses of about 28. A single female can lay 4-10 egg masses over her life. It takes about 35 days for a BMSB to go from egg to adult.

Once the eggs hatch, there are between 3-5 instar or nymph stages. The nymphs develop on tree fruit, are hungry and highly mobile, and move from crop to crop over the course of the growing season. Nymphs in various stages are present throughout the entire growing season – maximizing the damage they are able to inflict on crops. The adults are also highly mobile, easily flying up to 2 km (with reports as high as 50 km). In Virginia, BMSBs most likely have 2 generations per year.

Control

Indoors - As a home dweller, your best move is to prevent BMSBs from entering your abode. Take preventive measures during the summer, before the invasion. Concentrate your efforts on the west- and south-facing sides of the home, where BMSBs tend to congregate. Try to seal up all potential entry points – fill in cracks around windows, doors, chimneys, sidings, trim, and caulk; cover vents with wire mesh screening.

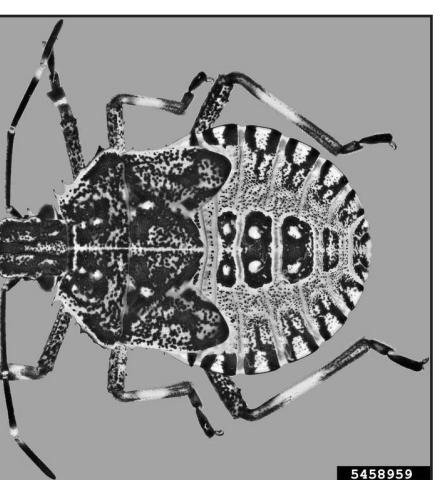
If the invasion has already occurred, vacuuming best controls individual insects (so my husband chose the correct method!). Spraying stink bugs with insecticide after they get inside still obligates you to vacuum up their dead bodies, which can attract carpet beetles. So skip the insecticide and go straight to the vacuum. We took the added precaution of taping up the end of the hose to prevent escape. But be aware that your vacuum cleaner will stink.

Outdoors - In general, controlling BMSBs using pesticides is tricky. The insecticides that work tend to have a short window of effectiveness. And with over 100 host species, adequate control may require quite a bit of pesticide application. If you are willing to give pesticides a try, spot treatments using a microencapsulated or wettable powder can be applied in the early fall around windows, doors, attic vents and other locations on the south and west walls of the structure. Timing is critical. Applying too early will allow the insecticide to degrade before the stink bugs begin trying to enter your home. Applying after the stink bugs have arrived will be useless as they will already be in your home. For recommendations on protecting specific plants or crops, please refer to the appropriate version of Virginia Cooperative Extension's Pest Management Guides. There are three versions that can be found at: <https://pubs.ext.vt.edu/456/456-018/456-018.htm>

- Home, Grounds and Animals
- Horticultural and Forest Crops
- Field Crops



BMSB damage on fruit. Photo by: Gary Bernon, USDA APHIS.



Adult BMSB. Notice the white stripes on the antennae and the smooth shoulder edges. Photo by: Steven Valley, OR Dept. of Agriculture.

BMSB cont. on page 4

In addition to the use of pesticides, research into controlling BMSBs organically with various management strategies is underway. One such approach is called trap cropping. This approach capitalizes on the idea of BMSBs invading crop perimeters first. Species that are highly attractive to BMSBs throughout the growing season, like sunflowers, are planted along the perimeter of cash crops. This trap crop area is then baited with attractant pheromones. BMSBs will invade these areas and stay there through the growing season, reducing the number that enter neighboring cash crops. Proper placement of trap crops is essential to this method's success.

Biological control methods are also being explored. Most of our native stink bug populations are kept in check by egg parasites. Unfortunately, egg parasitism in BMSBs is low. Researchers are working on bringing in parasites from Asia. The general consensus is that multiple tactics will be required to adequately protect cash crops from BMSBs.

As winter approaches, I hope my husband's descent into madness comes to an end. But I'm skeptical - even now, as I write this in December, we find at least 2 BMSBs every evening. Walking slowing across the wall. Tormenting my spouse.

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