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# WOODLOT TIPS



## SUMMER 2018

### Programs

**Saturday August 25 — WRWA Annual Meeting! Celebrating the “Career in the Woods” of Bill Guenther! In Newfane — Newfane Hill Old Common, Newfane Village Common (The Green), and at Bill’s place on Bensch Mountain.**

This Annual Meeting will be a big one with optional events from 8:30 a.m. to late afternoon (maybe into the evening!). First, a tour of the Newfane Town Forest (“The Old Common”) at the top of Newfane Hill which includes the old village, accompanied by someone from the Windham County Historical Society. Then we will move down to the current Newfane Village for some history and discussion of legacy tree maintenance at the Newfane Green.

At 11:30 the annual business meeting will be at Bill’s place, followed by the traditional barbecue lunch and potluck. **Again, please let Cindy Levine ([windhamwoodlands@gmail.com](mailto:windhamwoodlands@gmail.com)) know by August 20 whether you will want a hamburger, hot dog, a vegetarian burger (or all the above!). If you do not have email, please call Dana Ruppert at Bill Guenther’s office (802-257-7967, Ext. 302) to make a reservation.**

Bill will lead an afternoon workshop on small acreage management for sustainable home firewood production. The day will be capped by an appreciation of Bill Guenther’s years as Windham County Forester, aided by Munson Hick’s memories of his father, Halsey Hicks, the first Windham County Forester. This also will be the time for members to share stories of Bill, and enjoy cake, libation and good company. All events are open to non-members.

*See inside Spring issue or [www.windhamwoodlands.org](http://www.windhamwoodlands.org) for directions and full details.*

### **Saturday, Sept. 8, 10–11:30 a.m. — Recognizing Trees**

Mark Mikolas leads this walk to observe some of characteristics of trees that make them easily recognizable, using the techniques explained in his book, *A Beginner's Guide to Recognizing Trees of the Northeast*.

**Directions:** West River Trailhead near the Marina Restaurant. Turn into the Marina Restaurant parking lot. At the river, take a right on the dirt road that runs along the river. In approximately ½ mile there will be a cornfield and a big clearing on the right with an industrial building on it. We'll park and gather there. It is an easy level walk (also appropriate for kids) under the beautiful new I-91 bridge. ***Please, leave your dogs at home.***

For further information, contact Mark Mikolas ([mmikolas@yahoo.com](mailto:mmikolas@yahoo.com)).

### **Friday, October 19, 7–8:30 p.m. — Forest Management in Germany and the Black Forest: Sustainability through the Centuries. Winston Prouty Center, 4<sup>th</sup> floor**

Alan Robertson, Forester and Tree Farmer from Sheffield, will present a slide show and discussion about his time stationed in Germany, and a recent trip back with the American Forest Foundation looking at a variety of forestry philosophies and methods. After centuries of management, the knowledge is still evolving and the desire for sustainable “forever forests” (dauerwald) and natural regeneration is increasing.

### **Saturday, October 20, 9:30 a.m. – noon — Pressing and fermenting hard cider**

Presentation by Alan Robertson on how to brew your own hard cider, from the selection of apple varieties to bottling and enjoying. We will have varieties of apples, a press, and you can take home a gallon or two of fresh cider, with the knowledge of how to ferment into sparkling hard cider. Light refreshments provided.

**Place to be determined.** Check email and [www.windhamwoodlands.org](http://www.windhamwoodlands.org), or call 254-8325.

### ***Event alerts — exact dates and locations to be announced.***

- In November, County Forester Sam Schneski will host a program to update woodlot owners on the Use Value Appraisal program, aka, Current Use.
- In February, 2019, WRWA Trustee Andy Snelling will host a program on apple tree release.

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## **President's Message**

*By Marli Rabinowitz*

It is such a privilege to get old, and a rare gift to watch a forest grow and change over the years. On my land (and also on my neighbors' lands, to tell the truth), I notice the results of activities by me and by owners long before me, and elsewhere, the results of letting things develop without intervention. Changes seem to creep along and then suddenly accelerate. One day, a well-known area can be almost unrecognizable, with new growth filling empty spaces. At other times I pass by familiar trees I have known “personally” for years; as if we are old friends who silently acknowledge each other's persistence. Some of the groves on my land were pasture when I was a child but have now grown into closed canopy young forest. Some larger trees are dropping limbs but are huge and

solid; one huge pine was struck by lightning and is in pieces on the ground. Herbs like blue cohosh, maidenhair fern, and even ginseng are showing up. Birch, oak, maple, hickory, and other seedlings are popping up everywhere. This year there are rabbits all over the place, what's new in “your neck of the woods”?

With the news of EAB and other problems, on top of all the usual ones, I believe we should take time to pause in our work and just revel in the beauty of Vermont today. Windham County is the most forested county in Vermont, and we are harvesting less wood than we are growing. We have more trees than people, as they say. It's worth spending a slow minute to admire the deep greens of each

species, the year's growth, the beautiful smell of tree and leaf. You can walk the same path every day and see something new each time. Not because you didn't notice but because something new is always arising. What could be more worth your while than spending time wandering, enjoying and marveling at all that is out there. Plants, animals, fungi, water, soil. By observing with all the senses, and becoming familiar with every season, our decisions about land and its inhabitants will be well informed. This is even how EAB is being discovered, by close observation and noticing changes. It is our collective stewardship that maintains our county, our country, and our planet. I don't have much to say about the intricacies of this that you can't learn elsewhere: by experience, by listening to others' experiences, and by reading as widely as possible.

So as William Cullen Bryant said 200 years ago, "Go forth, under the open sky, and list/ To Nature's teachings" — (Thanatopsis, 1817)

**Lastly, the Trustees hope that all members will come to any and all parts of our August 25<sup>th</sup> extended Annual Meeting day in Newfane. This occasion also gives our WRWA membership a chance to wish Bill Guenther well in his upcoming retirement. Bring a friend! It is open to non-members, and the program will be interesting. Please let Cindy Levine know your meal preferences (see program listing for contact information). You will have a chance to meet her, and Carol Morrison may also be there. I love watching all the conversations as people catch up with old friends and meet new ones. See you then!**

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### **News from WRWA Scholarship Recipient Sam Stevens, Unity College in Maine**

*One day I was trying to get out of the office for a field visit, but had to take a phone call from headquarters. Then, running late, while walking down the hall a young man and a lady who looked familiar from last year's WRWA Annual meeting appeared. It turned out to be Sam Stevens and his mom. I hoped my appointment would be okay if I ran a bit late, so I stopped to speak with Sam. What a delightful, bright, articulate and polite young man he is! I can see that the Association made a good choice in granting him a scholarship this past academic year. While we were not able to award him one for this year, I do hope that he will apply for one for his Junior year.*

— Bill Guenther

Hello.

Well, it's been a pretty great year studying at Unity College. This past semester, I've taken courses in chainsaw, biology, GPS, writing, interpretive practices, and GIS (that last one wasn't much fun). I actually used the GPS program to mark veterans graves as a service to a nearby town. Not exactly a nature-focused use but I guess we can't live in a bubble. For next semester, the plan is Dendrology, North American Wildlife, Statistics (yippee), Environmental Issues & Insights, and Map & Compass.

I wanted to update you a little, as well as to just say thank you and to let you know how much I appreciate your assistance. I also followed your suggestion and applied for a seasonal position with Longview Forest Inc. Too late, I'm afraid, for this year but possibly next season. I have reapplied for your scholarship and hope that you find me worthy and grateful.

Once again thank you,

Cordially,  
Sam Stevens

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### **Making Essential Oils and Hydrosols from Local Plants**

*By Dan Healey*

On Sunday, May 20, WRWA presented a program entitled "Making Essential Oils and Hydrosols from Local Plants." The day began at 9 a.m. in the

UVM Extension's facilities in Brattleboro. Presenters Lena and Tom Groves introduced themselves and their business — Heart Grown Wild —

and showed us a distillation of essential oil of spruce that was already in progress. A full distillation can take up to six hours, so they had arrived early to begin the process.

The program was a combination of classroom time and a walk in the woods, identifying plants and talking about their different properties and sustainable harvest practices. The purpose of the program was to “educate attendees through a visual demonstration of the amount of plant material it takes to produce one drop of essential oil.” To that end, Tom and Lena showed us their distillation process to make essential oil and hydrosol of spruce with their distiller. The process started with several handfuls of spruce tips and twigs stuffed into a glass bulb about the size of a teapot. Six hours later, it ended with roughly ten drops of essential oil and about a quart of hydrosol.

According to the Oxford English Dictionary, distillation is:

1. The action of purifying a liquid by a process of heating and cooling.
2. The extraction of the essential meaning or most important aspects of something.

Between the actual distillation and the information that Tom and Lena shared, both definitions above easily describe the alchemy that is performed when Heart Grown Wild makes their products. To break it down simply, they boiled water. The steam passed through the bulb stuffed full of plant material, collecting the plant’s “essence.” It rose to the top of the distillation apparatus, where it began to condense with the help of cooling tap water passing along the glass tubes that held the steam-turning-to-liquid. As the steam condensed, it dripped into a collecting vessel. The vessel was immobile and allowed the oil to separate from the “leftover” water. The oil would later be drawn off as pure spruce essential oil. The remaining “wa-

ter,” called hydrosol, was collected as well. Both forms — the hydrosol and the extracted oil that rose to the top — would become ingredients for various products in Heart Grown Wild’s lineup. That includes essential oils, products made with essential oils, and myriad items made from the hydrosol, including serums, toners and body oils.

Hydrosols are the byproduct of distilling essential oils. However, “byproduct” is an understatement. Hydrosol is the main ingredient in many common products, including witch hazel and rosewater. Unlike the essential oils that come out of distillation, hydrosol carries the water-soluble properties of a plant as well as microscopic droplets of essential oils. Other common uses of hydrosol include household cleaner/degreaser, bath enhancers, and aromatherapy mists.

One theme that Tom and Lena stress is SAFETY. Distilling involves not only heat or fire or electricity, but it produces very concentrated and volatile oil that can actually be dangerous if not used properly. Whether you buy essential oils or make your own, be aware of the proper dosages so you don’t hurt yourself. When using essential oils, the common protocol includes the following guidelines:

For facial applications, use a 1% solution of essential oil. That’s about 6 drops per ounce of carrier (water, oil, etc.)

For other parts of the body, 2% is safe (12 drops per ounce).

For topical medicinal uses, 3% is safe (18 drops per ounce).

If you want to learn more, look for the next program with Heart Grown Wild. Or, check out their booth at the Brattleboro Farmer’s Market, or their website at [www.heartgrownwild.squarespace.com](http://www.heartgrownwild.squarespace.com).

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## Dan Ladd: Creating Art by “Making Suggestions” to Trees

*By Margaret MacDonald; photos by Andy Snelling*

On June 16, artist Dan Ladd guided 28 people on a tour of tree art he created on a one-acre lot in Putney Village that he owned from 1979 to 2008. Dan began work on his living artworks in the early 1980s, and commented that he was “surprised they lasted this long.” He explained that he wanted to

interact with living plant material as an art medium, producing works that would continue to change over the years as the trees grew. He had become intrigued by self-grafting that occurs naturally in the woods, and this inspired him to use directed grafting to create unusual shapes from

living trees. He has no formal training in botany, but has learned by experience. In describing his technique, Dan said, “I essentially make a suggestion to the tree.” Trees naturally try to grow upwards toward the light, so persuading them to grow horizontally takes a lot of work!

Dan stated that in general the “grafting window” spans May and June; he cannot work on members of the apple family after June, but sycamore can be grafted through August. Grafts normally take

a year to establish themselves, although he sometimes has to nurse grafts in members of the apple family for two years. Dan does not make any adjustments to trees more than 15 feet above the ground, given that the upper portions are subject to more wind and any grafting would likely tear.

The first artwork we visited was an early piece constructed from two crabapple trees that Dan said he had “really jerked around” in an effort to make an “upright frame,” but the upper horizontal portion of the frame remains incomplete. He wrapped the suckers from the two trees around to graft them into a single trunk, and then separated the two elements again off center. Dan commented that this structure is especially interesting to look at when the trees are in bloom. He next took us to a creation made from what he described as “apples gone to pot.” It was supposed to be architectural, but the apple trees grew together with the surrounding maples, which took over. The combined work has two trunks fueling a single tree. In a third work, Dan tried to make a zigzag or a star from five apple trees.

Another artwork on the property consists of two sycamores that Dan planted near one another and then grafted together to form a single tree. He then cut an opening in the trunk, inserted a marble stone between the two portions, and then wrapped the upper branches of the trees together above the stone to create a single central leader. At his direction Mike Abiotti of Abiotti Monuments in Brattleboro (who owns the state champion cucumber tree) cut the word “Forsooth” into



the stone. Dan expects that eventually the tree will grow completely over the marble insert.

Dan showed us

another upright frame in which he first brought two Liberty Elm trees together by intertwining suckers from the trees to create a central vertical element. He then divided that leader and forced the elements to grow horizontally, holding them apart with boards that he cut from other trees on the property and fastened in place using bolts. Dan noted that the boards should be removed to reduce the pressure on the elms and because the trees are beginning to absorb them. The two elements were then allowed to grow vertically again; when they reached the desired height Dan created new grafts to draw the upper elements together, again supporting the horizontal elements with boards. The bolts will remain in the trees, which will simply grow around them. Dan said he feels kinship with trees that have incorporated metal: he has had two knee replacements, and the bone grows around the metal in his kneecaps.

Unfortunately, the elms are showing signs of Dutch elm disease (DED), and Dan commented “I expect the inevitable — decay.” This prompted

Bill Guenther to talk about DED and the efforts to develop elm cultivars that would resist the disease. He noted that DED is still active and has become hyper-virulent; the mortality rate among Liberty Elms (the first disease-resistant strain developed) is now 3%, which the U.S. Forest Service considers unacceptably high. More recently, the Forest Service has developed the New Harmony and Valley Forge cultivars, which have shown good resistance to DED. The DED fungus is carried by bark beetles, and Bill emphasized that sanitation is key to controlling DED; after diseased trees have been cut down all





material should be burned immediately to kill the beetles.



For the next artwork we visited, Dan brought leaders from four sycamore trees together into one trunk, then separated them again to rejoin the original four trunks, producing an open cube. The sculpture is now a single tree, nourished by the four trunks. The trees were of different ages, heights, and diameters when Dan began this project. To increase balance among the elements, he used a chainsaw to remove approximately three-quarters of the trunk of the largest tree, leaving a wedge-shaped upright element that would consume less energy than the original tree. He sealed the cuts (which he does not usually do; he and Bill Guenther agree that sealing wounds in trees usually just “keeps the bad stuff in”) with a “biodynamic salve” made from cow manure, clay, and sand. Dan noted that living trees have to remain flexible, so landowners should not use rigid materials as sealants.

We then visited another shape constructed from apple trees; Dan sharpened shoots that had sprouted along the sides of the trunk and stuck the shoots under the bark. The trunk has become larger as it goes up because it is now fed by many little branches.

The last four artworks we visited were all constructed from trees that Dan had planted himself; he noted that they had gone wild. He described two of them as “upside down boat frames.” One is a pergola dome. Dan said he had wanted to create an igloo frame, but it remains incomplete.

When asked what species he preferred for his work, Dan said that sycamores were his favorite. Members of the apple family simply have too many problems, such as different types of pests, and elms are very hard to graft.

A tour participant asked Dan if he thought much about the interior spaces of his artworks, and Dan responded that he primarily looks at his works from the outside. He concentrates on the trunks and branches, and admitted that he often forgets about the leaves. In one case he did think about building a shelter with a gate, pitched roof, and windows, but he sold the property before the building was completed.

As our tour ended, Dan commented that through the Internet he has met other people doing similar work. There seems to be special interest in growing chairs: an artist in Thailand uses teak trees, an artist in Queensland uses plum trees, and one man in England has several acres of “chair parks.”

WRWA thanks Dan Ladd for a most intriguing tour, and Mark Mikolas for alerting Bill Guenther about Dan and his Putney “outdoor studio.” For more information and photographs of Dan’s work, visit his website: <http://www.danladd.com>. You can also use the website to contact Dan if you would like him to create one of his living artworks on your property.

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## Advances in the Maple Industry

*Sam Schneski, Windham and Windsor County Forester*

As a county forester I see lots of different woodlots and sugaring operations. I have a strong interest in sugarmaking because I do a little of it myself. I enjoy the process, the equipment, and most of all, the product. By no means do I claim to be up on all the latest advances in technology, but that said, I do have a decent understanding and was recently asked to give an overview of some of

the newer pieces of equipment or technological advances in the industry.

Most folks reading this are familiar with the basic concepts of sugaring. Trees are tapped with taps also known as spiles or spouts. Sap is collected traditionally in buckets but more commonly with tubing strung from tree to tree, ending at a sugar-

house or collection tank. Sap (roughly 98% water) is boiled in an evaporator. When the liquid in the evaporator reaches a specific density (equal to 7.1 degrees over the boiling point of water) it is officially syrup.

Sugar content varies from tree to tree and week to week. Typically, the sugar content is low in the very beginning of the season, ramps up during the middle of the season, and begins to decline near the end. There are a lot of unknowns in sugaring and to a certain degree that is true regarding sugar content. An open grown, thriving sugar maple that has a huge, healthy photosynthesizing crown on rich calcareous soils with good drainage and good water availability is going to produce sweeter syrup than would a small, crowded, sickly little-crowned maple growing on shallow to bedrock soils. In general we tap trees that are somewhere in between those two extremes. Here is a brief overview from woods to table.

### ***In the sugarbush***

In many sugaring operations the use of tubing systems has surpassed the bucket collection method. There are many ways to set up a tubing system but some general rules to follow are to set it up so sap can flow downhill (unless assisted by a pump), make sure all lines are tight, and all connections are tight. The tight lines reduce friction, chances of sap pooling up, and bacterial growth, which hampers flow and ultimately the amount of sap collected. Tight connections ensure good vacuum if any is in the system.

*Tubing:* A commonly used lateral line and drop line diameter is 5/16ths of an inch. The drop line carries sap from the spout to the lateral line and the lateral line carries sap to the main line. Main lines, which transport sap to collection areas, vary in diameter based on number of taps and the use of vacuum. Typically they will be anywhere from ¾"-2" diameter. Transport lines that bring sap long distances from mainlines (sometimes miles) to collection tanks can be very large in the realm of 2-6" diameter.

In the past few decades tubing has been made from different types of plastic. Some of this is designed to stretch a little, not at all, and some to stretch quite a bit. The ability of the tubing to hold on to barbed fittings on the base of taps and junction T's is essential. Most have been designed to

minimize the friction loss of sap on tubing to reduce bacterial growth and enhance flow.

Within the past few years new lateral and drop line tubing has been made that is 3/16<sup>th</sup> diameter. This tubing, with a good slope, creates a natural vacuum, meaning there is no use of a mechanical vacuum pump at a collection area. The weight of the sap in the smaller tubing creates a vacuum that can often rival that of a mechanical vacuum. A rule of thumb in 3/16" tubing systems is that for every foot of elevation gain from the point of collection (ie. tank or sugarhouse) the system can receive approximately 0.88" of vacuum. Gravity tubing on 5/16" without a pump has no vacuum at all so this 3/16ths system has done wonders for the smaller producer who has the slope but doesn't have a mechanical vacuum pump attached to the tubing. There are pluses and minuses associated with each type of system. Some producers are using a hybrid type of system which involves 3/16" tubing and a vacuum pump. The maximum vacuum achievable on any system is related to height above sea level and varies between 28-30" of vacuum. There are many hobby producers and a handful of diehard commercial producers who use buckets. They may not get as much sap as the folks with vacuum, but they know which trees run well and some think that the bacterial growth is less in a cool bucket of sap with a lid versus warm tubing directly exposed to the sun.

*Vacuum:* Vacuum systems have come a long way since they came onto the maple scene in the 60s and 70s. The first vacuum systems were used by some dairy farmers who also used them in their milking operations. These pumps maxed out at 15" of vacuum. Today there are several models of vacuum pumps that can achieve vacuum levels above 25".

*Taps/spouts:* Many varieties of taps have been produced in the last 20 or so years. Spout sizes have changed. Enough research has been done to prove that the traditional spout opening size of 7/16" does not yield any more sap than 5/16", which was considered a "health spout". With the smaller tap the tree wound is smaller and comparable amounts of sap can be collected using the 5/16" tap. Health spouts have become so common that in the Use Value Appraisal program we refer to them as "standard spouts" and the 7/16" spouts as "large spouts." There are commonly accepted tapping guidelines addressing what is considered

sustainable tapping. Tapping a smaller than 10" tree is not recommended, 10-14" could have 1 tap, 16-20" could have 2 taps, 22" and over can have 3 taps, and it is not recommended to ever use 4 or more taps on a single tree regardless of tree size. These are general guidelines. There are more in-depth ways to decide how many taps could be used when assessing the "tappable" circumference of a tree; this area excludes defects and columns of decay.

Another advance is the development of low cost, recyclable, disposable taps. They can cost as little as around 16 cents each and are replaced each year to avoid bacterial buildup from season to season. Another type of tap is the "stubby" tap. The stubby is a fitting that is attached to the drop line and can receive a tap that fits into it. The tap is the part that has direct contact with the tree and is disposed of every year. Using this type of approach minimizes the amount of drop line length lost each year when having to cut off the disposable taps. The benefit to a longer drop line is the ability to tap far away from previous years' tap holes. Old tap holes are surrounded by dead wood that doesn't yield sap until enough years go by that new wood has grown over the dead wood and is much thicker than the depth of a new tap hole.

The development of the check valve (CV) spout has won some producers' praise. This spout acts exactly like a check valve. It only allows a one-way flow. The inside of a maple tree has a lot of microscopic air space. This space makes the whole sap flow mechanism work. As the freeze/thaw cycle begins, ice crystals have formed by drawing sap from the vessels in the wood fiber. The crystals fill the air spaces and the result is negative pressure. When the weather warms these ice crystals rapidly melt resulting in a positive pressure inside the tree. Pressures as high as 30 PSI (pounds per square inch) can result. That's as much as a car tire! The wood holds on to most of the sap. That's why the sap drips out and doesn't drain like a pipe with a leak. As the cycle freeze sets in, any amount of bacterial growth that has grown during the day, or season, in the tubing moves back to the tap hole. This negative pressure can equal -7.5 PSI. Bacterial growth contributes to season length in the sense that tap holes will seal sooner if they have high amounts of bacterial growth. The CV spouts have a little ball in them that pushes forward out of the way during a sap run. At the end of a run the ball gets sucked back

against the opening of the spout sealing the tap hole off from "contamination." Some sugarmakers swear by its effectiveness and attribute getting more sap and extending their season to the CV spout. I've heard others say any little bit of residual wood from drilling the tap hole out can plug the spout easily rendering the function of the ball in the tap ineffective. Good clean tap holes are a must, especially if you're going to use the CV spout.

### ***In the sugarhouse***

*Reverse osmosis (RO):* RO machines are common in large sugaring operations today. They are also being used in some medium- to small-scale operations. They have been around for decades, but within the past 10 years became much more commonplace with a lot of different sized and priced machines available. The concept is the same as RO systems for drinking water, except in sugaring we want to keep what would be considered "junk" in the water purifying system. This is the stuff left behind that can't pass through the membranes. Sugar molecules are larger than water molecules, so an RO system can concentrate sap into something that is sweeter than what came out of the tree, leaving pure water behind. A sugar maple tree producing sap at 2% sugar content means it would take roughly 43 gallons of sap to make a gallon of syrup. The Jones rule of 86 allows you to quickly figure this out. Divide sugar content by 86. Many large producers that I know of will concentrate their sap sugar content by anywhere from 12-20%. This means a huge reduction in time and energy to boil sap to syrup. Some people feel this affects the flavor of the finished product while others don't think it influences flavor at all. In the past two years there have been extreme advances in RO capability. It is now possible to concentrate sap to a sugar content of 35%! I think this is only done at a few operations in Vermont so far. The flip side of that for the small producer is that they're able to concentrate low sugar content sap at around 1.5% to 3%, cutting boiling time and fuel use in half.

*Evaporator:* No matter how much concentrating of sap happens with RO, the sap still needs to be boiled in an evaporator. There are way too many sizes to list here. They vary in size from a small hobbyist barrel stove with a pan on it to a 6'x20' or larger evaporator. The key with all of them is to boil off water, ideally as quickly as possible. They can be wood fired, oil fired, chip fired, or electric.



Maybe a new one was invented during the time I wrote this article, but those are the types I can think of off the top of my head. Some evaporators have fully insulated arches (fire box and area where heat/fire travels under the pans) with air blowers directly on the fire, air under fire (AUF), or air over fire (AOF). Some have air injection systems that inject air into the boiling sap in the back pan (AKA flue pan), which can help to make lighter syrup. For the most part sugarmakers don't have ultimate control over what grade of syrup they make but they can influence it a little bit. Boiling freshly collected sap right away and using an air injection system are two ways to improve the likelihood of making lighter syrup. Letting sap sit around for a while for bacteria to have an effect is one way to make darker syrup. Another way is to boil slowly with a subdued fire. In all cases the syrup is boiled and filtered so no bacteria remain in the finished product.

*Filtering:* In the process of making syrup some of the minerals form niter (potassium nitrate) and remain suspended in the syrup. Left alone, most of this niter would eventually settle to the bottom of the syrup container. But most consumers expect clear syrup, so filtering is a must. Gravity filtering consists of having a pre-filter (a thin fabric similar to cheese cloth) that catches most of the big particles followed by a main filter that has a much tighter weave to catch most of the super small particles. These filters can be sheets that are laid on top of a screen over a large square tank or cone filters that are hung down vertically into a tank. The sheet filters use more of the surface of the filters but don't filter as fast because the weight of the syrup is spread out. The weight of syrup leads to slightly faster filtering in cone filters, but the bulk of the filtering is happening at the bottom of the cone and doesn't use as much of the filter as sheet filtering.

Another way to filter syrup is with a filter press, a common way to filter syrup when producing large amounts. The presses come in a variety of sizes depending on the amount of syrup and the speed at which you need to filter. A filter press uses a pump and metal frames that are sandwiched with filter paper. Diatomaceous earth (DE) is mixed into the finished syrup. (DE is a natural product made up of fossilized remains of tiny aquatic organisms. It usually comes in the form of a white powder and is in a lot of everyday products we as humans use and/or consume.) Niter and other "im-

perfections" in the syrup bind with the DE. The mixture getting pushed through the plates at high pressure binds to the paper filters and what comes out is crystal clear syrup. This method requires power, a close eye on pump pressure, and the occasional changing of filter press papers (depending on the volume of syrup). This is much more expensive than gravity filtering.

Finally, there is something called canister filtering. I've never used one, but it involves high pressure and filters that are in the range of 1-5 microns. These filters are wrapped around a metal cylinder inside a pressurized container that can be rinsed off and re-used. There can be good recovery of potentially lost syrup in the cylinder. You can rinse the inside of it with hot water and put that back into the flue pan for reprocessing.

### ***On the Table***

*Grading:* The biggest recent change in sugaring for Vermont sugar makers has been the change in the syrup grading system. In 2014, after spending lots of time and money on market research, the Vermont Maple Sugar Makers Association introduced new, more comprehensive guidelines for grading maple syrup. The idea was to make maple grades understandable for a larger component of the general consuming public. We in Vermont know what we're getting when we buy Fancy syrup or grade B, but people from "away" might not know the difference and perhaps assume something that is Grade B can't possibly taste as good as something called Fancy. So the new system involves color and flavor descriptors as well as calling all syrup Grade A. After all, if you had a choice and the price was the same would you buy Grade A or Grade B?

The new grades don't line up exactly with the old grades so there is some overlap. Here is a quick comparison:

Old – Fancy or Vermont Fancy

New – Grade A, *Golden Color with Delicate Flavor*

Old – Grade A Medium Amber, Grade A, Dark Amber

New – Grade A, *Amber Color with Rich Flavor*

Old – Grade A Dark Amber, Grade B

New – Grade A, *Dark Color with Robust Flavor*

Old – Grade C

New – Grade A, *Very Dark Color with Strong Flavor*

I know there are some folks who vehemently disagree with the change of grades and think it has made Vermont lose its maple independence. Others welcome the change and believe it's a good step towards educating consumers and promoting more syrup sales. I'm somewhere in between.

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There is more of me that values tradition than not, but I can also see the importance of staying at the forefront of the maple industry in the U.S.

## Forest Health Update — What you Should Pay Attention to in the Woods

*By Bill Guenther, Windham County Forester*

**Emerald Ash Borer (EAB)** — In the last newsletter I tried to stay optimistic that things would not be too bad with this exotic invasive insect from Asia. However, this “glass three quarters full” guy is now getting really concerned. Since our last newsletter, the insect was discovered in Maine in June, and last month it was discovered in North Adams, Mass., just three miles from the Vermont border. When you drew the dreaded 10-mile circle from that spot (this means that the insect will likely be found in all areas of this circle within five years) the radius reached into Windham County.

To make matters worse, just last week Rhode Island was added to the list and on August 1<sup>st</sup> it was discovered in one of our Purple Traps in Stamford, Vermont, a small town in Bennington County. When you draw the 10-mile radius ring, it now touches the Windham County towns of Whitingham and Wilmington.

So now we must face the realization that we will be living and dealing with EAB in Windham County. **For those of you enrolled in the UVA/Current Use program, please look over carefully the official UVA EAB guidelines that follow this article.**

The Vermont Forests, Parks & Recreation Department will be hosting a public meeting sometime in mid-September in the Bennington area, so please check back with us for the date, time, and place to learn more about the current status of EAB in Southern Vermont.



Emerald Ash Borer — the insect, the tunnels, the larva

The FP&R website, [www.vtinvasives.org](http://www.vtinvasives.org), has a plethora of information about this insect and is currently your best source of information. We have numerous documents available for landowners, foresters, arborists, and concerned citizens. So stay tuned, things seem to be changing daily on what is happening with EAB in Vermont.

I'll touch on a couple other forest health issues that occurred this spring and early summer. Windham County dodged the major bullet with respect to Forest Tent Caterpillar (FTC). While there was some damage noted, the worst was once again up in Orleans, Caledonia, Lamoille, and northern Franklin Counties. We did have three sugarmakers up in Westminster decide to use the nontoxic bacterium Bt which was applied aerially. One of the sugarmakers reported to me that the efficacy was very high. Since these populations usually collapse after roughly three or four years, we may be just about past what could have been the fairly widespread mortality that is been observed in some areas up north.

The White Pine Needle blights have once again returned this spring, although they occurred later in June than in past years. These fungus diseases, which overwinter in the needles on the ground, pop out when we get steady spring rains. Our dry May kept them at bay, but once the wet stuff arrived, many of our native white pines turned a golden hue with the needles dropping off several weeks later. We have seen this phenomenon now for five or six straight years and know that it stresses the tree, but we do not believe that this affliction alone has yet killed any trees.

# Use Value Appraisal Standards for Forest Management Related to Emerald Ash Borer Infestations

Approved by Commissioner Snyder April 17, 2018

## Overview

Emerald ash borer (EAB) has been detected in Vermont and poses a significant threat to all species of ash trees in the state. Adult emerald ash borer beetles feed on the leaves of the trees; however, it is the larvae that cause the most damage, ultimately killing ash trees through the creation of S-shaped burrows (called galleries) just underneath the bark. An abundance of galleries in a single tree ultimately severs the flow of carbohydrates within the tree, usually causing tree mortality within three to five years.

Widespread ash tree death will change forest ecosystems in unpredictable ways. All landowners in Vermont should be considering the implications of EAB on their land, understanding that ash trees become more vulnerable with increased proximity to an EAB infestation. Landowners planning to harvest ash trees must now plan strategically to retain the economic value of their woodlot while preserving forest health and diversity (which also support economic value in the long term).

Management activities in response to EAB that retain, regenerate, and grow high-quality sawtimber trees; that maintain ash as a component of the forest; that support species- and age-class diversity across the landscape; and that preserve soil health and stability will support the continued ability of Vermont forests to provide a wide diversity of both ecosystem benefits and economic benefits in spite of EAB. The harvest of ash trees in the near future may be part of an effective silvicultural approach for many landowners on many parcels but will not necessarily be the most appropriate strategy on all parcels. Landowners and forest managers are encouraged to respond to the threat of EAB in ways that strike the right balance between the immediate and long-term needs of landowners and overall forest health and productivity.

## Forest Management Plan and Amendment Policy

Forest management activity on land enrolled in Use Value Appraisal (UVA) must comply with a forest management plan approved by the Department of Forests, Parks and Recreation. Forest management plans may be amended to adapt to changing conditions or objectives, including the threat posed by EAB. The silvicultural response to EAB, including prescriptions of ash salvage or preemptive salvage, should be designed and implemented in ways that are consistent with long-range silvicultural objectives and with UVA program and management plan standards. Where EAB does not pose a significant or urgent threat, where management activity will not advance objectives, or where there are operational limitations to an effective response, “no activity” may be a reasonable, approvable option.

## Management terms

- **Salvage:** In the UVA program, salvage cutting is defined as the removal of trees that have been or are in imminent danger of being killed or damaged by natural injurious agents other than competition among trees. **A “salvage” prescription is only appropriate if signs or symptoms of EAB are present.**

- **Preemptive Salvage:** Preemptive salvage is not defined for UVA purposes. However, preemptive salvage is often used to characterize management strategies that are silviculturally justified and are designed, in-part, to harvest trees in advance of expected damage or mortality that may result from a natural injurious agent other than competition among trees. It differs from salvage in that salvage would occur where damage or mortality has occurred, and preemptive salvage would occur where the damage or premature mortality is expected but has not occurred.

#### EAB Management Considerations:

- The closer a stand is to a known infestation, the sooner it will be affected, and the more urgent it becomes to plan for EAB. At 10 miles from a known infestation a stand with ash may be affected by EAB within a few years.
- Retain, regenerate, and grow high-quality trees of commercial species, including ash, with good vigor and growth potential.
- As necessary, and where appropriate, integrate ash salvage or preemptive salvage with already planned silvicultural strategies to achieve long-range objectives.
- Attempt to maintain ash in the forest. Retained and surviving ash trees will continue to produce the seed that is necessary to establish the next generation of ash trees.
- Silvicultural adjustments related to ash management may include:
  - Reducing the percentage of ash in a stand.
  - Reducing diameter objectives for ash.
  - Favoring retention, regeneration, and release of non-ash species.
  - Preventing establishment of, and/or controlling invasive plants, particularly where they will be released by dying ash, salvage of ash, preemptive salvage of ash, or any harvesting.
  - Delayed harvesting, release or retention of scattered ash trees, and silvicultural approaches that enhance vigor and growth in retained ash.
  - Incorporation of silvicultural strategies that support regeneration of ash in conjunction with commercial non-ash species.

#### Stand Objectives and Prescription Standards:

- Revisit long-range silvicultural objectives for stands with a significant ash component.
- Keep prescriptions consistent or compatible with long-range silvicultural objectives.
- Prescriptions, including salvage and preemptive salvage, must include the following:
  - Description of trees to be harvested including information on species, diameters, quality, etc.
  - Species favored for retention
  - Species favored for regeneration
  - Residual stocking objectives for the stand expressed in basal area per acre.
  - Other required parameters will vary based on treatment type. See [Plan Standards](#) for more details on requirements.
- Ensure that all prescriptions include sufficient detail to allow for effective evaluation of the treatment's consistency with management objectives and existing stand conditions.
- When considering silviculture that incorporates elements of salvage or preemptive salvage; if common silvicultural treatment types such as thinning, group selection, etc., reasonably characterize the silvicultural activity intended to adapt to EAB, then these should be used to describe the treatment.

## Useful Links

- [Emerald Ash Borer - Information for Forest Landowners](#) - a resource
  - Stay up to date with known infestations at [vtinvasives.org](http://vtinvasives.org)
  - Contact a consulting or [county forester](#) to learn more about the impact of EAB on forestland.
  - Review the Landowner Guides for a Successful Timber Harvest at [www.VTCutWithConfidence.com](http://www.VTCutWithConfidence.com)
  - Refamiliarize yourself with the general requirements and opportunities in the Use Value Appraisal Program by reviewing the [UVA brochure](#).
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### ***Farewell!***

After nearly 32 years' service as your County Forester, I have decided to hang up my boots (well, not all of them, just the County Forester ones) and head into that third phase of life called retirement. I have loved this career as my own child and have been so enriched by the wonderful people and the awesome forests of Windham County. It was a big move for me back in 1987 to pull up stakes from my home in Norwich to come down to "The Banana Belt" and I am so glad I took that chance, which has left me truly blessed.

So much has changed since I started in 1987. At that time, invasive exotic plants were not even on our screen, excessive deer browse was not yet an issue, and the native fern problems were not even of much concern. But times changed, and the dynamic status of our forest continues to move on.

I will be hosting the Annual Meeting this year with several stops before getting up to my place on Bensch Mountain in Newfane, and the Program Committee has somehow turned this into a bit of a retirement party. My last official day with the State will be September 29<sup>th</sup>.

For the near term I need to just try to slow down, possibly even unplug from e-mail and the internet for a couple of months. However, in some time, I do plan to be involved again in WRWA. It is a great organization that I have always believed in and tried to support to the fullest. While you may not see me writing as many articles as in the past, I do want to do things in the woods more and especially hope to continue to conduct the biennial BIG Tree Tour. Also, I have set a tentative date for Saturday, March 2, 2019, to take a group out to the Somerset Old Growth Yellow Birches to marvel at the State Champ and get into some real wilderness out there in the wilds of Somerset ... and no, I won't be using a GPS to find the tree.

With best wishes,  
Faithfully yours,  
Bill Guenther, Windham County Forester



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### **Upcoming Programs**

*(See inside for details)*

<b>Saturday August 25, all day or some of it!</b>	<b>WRWA Annual Meeting! Celebrating the “Career in the Woods” of Bill Guenther! In Newfane — Newfane Hill Old Common, Newfane Village Common (The Green), and at Bill’s place on Bensch Mountain.</b>
<b>Saturday, Sept. 8, 10–11:30 a.m.</b>	<b>Recognizing Trees —Author Mark Mikolas leads this walk to observe easily recognizable characteristics of trees</b>
<b>Friday, October 19, 7–8:30 p.m.</b>	<b>Forest Management in Germany and the Black Forest: Sustainability through the Centuries.</b>
<b>Saturday, October 20, 9:30 a.m. – noon</b>	<b>Pressing and fermenting hard cider</b>

#### *Mission of Windham Regional Woodlands Association*

WRWA is a non-profit association of woodland owners and managers, members of the wood products industry, and other interested parties in the Windham County Region who advocate both sustainable management practices and the enjoyment of forests and their ecosystems. In support of these ends, WRWA offers educational opportunities for all age groups. Areas of interest include: biodiversity; clean air and water; cultural and historic resources; fair and equitable taxation of woodland; forest products; recreation; scenic beauty; and wildlife habitat. We recognize that these concepts are continually evolving and therefore will strive to consider the most current thinking and values regarding them.