The New York Forest Owner

A Publication of The New York Forest Owners Association

For people caring about New York's trees and forests

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Starting a Home Orchard

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In This Issue . . .

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The New York Forest Owner is a bi-monthly publication of The New York Forest Owners Association, PO Box 541, Lima, NY 14485. Materials submitted for publication should be sent to: ***Mary Beth Malmsheimer****, Editor, The New York Forest Owner, 134 Lincklaen Street, Cazenovia, New York 13035; Materials may also be e-mailed to mmalmshe@syr.edu; direct all questions and/or comments to jefffjosephwoodworker@gmail.com. Articles, artwork and photos are invited and if requested, are returned after use.* ***The deadline for submission for the May/June issue is April 1, 2021.***

Please address all membership fees and change of address requests to PO Box 541, Lima, NY 14485. 1-800-836-3566. Cost of family membership/subscription is $45.

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Cover: Front cover: Semi-dwarf Autumn Crisp apple tree maturing a sizeable crop of disease-resistant and flavorful fruit. See page 4 for full article. Photo courtesy of Jeff Joseph.

From The President

The Spring season of 2021 has arrived.

Spring is the season in which

- The beauty of nature is seen
- The voice of nature is heard
- The scents of nature are savored
- The touch of nature can be felt
- The fruits of nature can be sampled

It's the time of year to shake off the winter's "cabin fever" doldrums. Whether it's a walk in the woods to just relax, or to start to plan activities to manage your woodlot, it's "time to get outside."

Over the past several months, NYFOA's chapter leadership teams and our state-wide board members continue planning activities for the balance of the year. These activities must conform with local health directives. Based on those directives our members will see different live activities (e.g. woods walks, game of logging) in different areas of the state. However, NYFOA, while working with other organizations, has been able to identify many webinars and tele-conferences that are available to all members statewide. Educational resources and updates are communicated to our members via *The New York Forest Owner* magazine, *The Woodlot* e-newsletter, e- news-blasts, chapter newsletters, and regular e-mail. Please keep your contact information updated to ensure receipt of timely information.

Please share this magazine with a neighbor and urge them to join NYFOA. By gaining more members, NYFOA's voice will become stronger!

NYFOA has appointed Craig Vollmer to serve as our association's Executive Director. Craig has 30+ years working in the forestry industry in New York State. In addition to his forestry education at SUNY ESF, Craig has served as past chair of the NY Society of American Foresters, has presented at many forestry related conferences, and has worked individually with many private woodlot owners. Craig's responsibilities will include program development, member, chapter and committee support, advocacy, fund raising, grant management, and inter-organizational relations. We are looking forward to the added value Craig will bring to NYFOA.

–Art Wagner
NYFOA President

The mission of the New York Forest Owners Association (NYFOA) is to promote sustainable forestry practices and improved stewardship on privately owned woodlands in New York State. NYFOA is a not-for-profit group of people who care about NYS's trees and forests and are interested in the thoughtful management of private forests for the benefit of current and future generations.

Join!

NYFOA is a not-for-profit group promoting stewardship of private forests for the benefit of current and future generations. Through local chapters and statewide activities, NYFOA helps woodland owners to become responsible stewards and helps the interested public to appreciate the importance of New York's forests.

Join NYFOA today and begin to receive its many benefits including: six issues of ***The New York Forest Owner***, woodswalks, chapter meetings, and statewide meetings.

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Starting a Home Orchard: *A Beginner's Guide*

Jeff Joseph

In these pages, we spend most of our time focused on timber, and on working in our woodlots, but I imagine that quite a few of us also have planted and tended some fruit trees along the way, or at least have wanted to. As this year marks the 20th anniversary of when I planted and grafted my first fruit trees, I thought I might share some observations, critical points, and potential pitfalls to consider before adding some fruit trees alongside your woodlot. Mostly these are the kind of basic principles I wish someone had told me at the outset, and which will hopefully save you from enduring much of the trial and error that I have engaged in over the years. In any event, the following reflects highlights of the circuitous route that has led to my current low-maintenance orchard of about 45 trees.

As we all know, achieving results with a rotation of timber is measured in decades, so starting off properly can make a tremendous difference in terms of return on investment, whether that investment be in cash, time, or hard effort. A significant benefit of fruit trees as an adjunct to one's woodlot is that the timeline is greatly compressed, with well-tended trees beginning to bear in as little as 3-4 years from the time of planting, and providing abundant crops for many years thereafter.

Keepsake apple—growing your own gives you the chance to try varieties with radically different colors, flavors, and textures. All images courtesy of the author.

An additional benefit is that at the end of a fruit tree's life, the wood itself is often quite uniquely colored and figured, and so is useful for a variety of woodworking applications if you are so inclined.

As this will be a short article, it is of course hardly comprehensive. Consider it a "crash course" of bullet points to get you started thinking about what is involved in selecting, propagating, siting, and tending

fruit trees in our region---and keep in mind that it only reflects one guy's experience and preferences, so your specific site conditions (and personal taste preferences) may dictate other choices, or bring different results. The orchard I've ended up with today is the result of two decades of trying to maximize the output of high-quality fruit, with a minimal investment of time and effort. Balancing the two has required many tradeoffs, and what I started out thinking and doing with the best of intentions bears little resemblance to how I go about things today. Much of what is to follow might seem quite simple, but I can say from experience that adhering to these principles to the degree feasible in your situation will greatly increase your chances of success.

Sun/Site:

If a tree is going to grow, it has to be able to make its own food, and it can't do this without ample sunlight throughout the growing season. Excessively shady sites simply will not work. Case in point: about 10 years ago, a friend of mine bought a property that was situated on the east side of a steep hill, and so even in the height of summer his land was fully shaded by mid-afternoon. He really wanted fruit trees, so planted a little orchard, and now ten years on, all the trees are stunted and/or diseased, have flowered minimally, and so have borne almost no fruit. He is considering just cutting it all down at this point. There is a range of sun vs. shade that will work, but you'll have to accept that with less sun, your trees will come into bearing much more slowly, and that you may never be able to properly ripen many varieties of fruit.

Other things to keep in mind in terms of siting are aiming to avoid planting in known frost pockets or particularly cold spots on your property, and preferably planting on sloping land, as this will help create air movement that may help shield your trees from light frost during bloom time. An additional consideration is that while soils tend to be better in valley bottoms than on ridgetops, the bottomland sites tend to be more prone to frost, and due to less air movement and higher humidity, can also have more trouble with insects and disease. My site is in the very bottom of a narrow valley, and it works well enough for me, despite these challenges. Ideally you will spend some time in advance assessing options for your orchard site; if so, try and observe each of them through all four seasons if possible before choosing to avoid unforeseen difficulties.

Fruit trees can also provide great bird habitat, as this young oriole can attest.

Soil:

Most fruit trees will grow in a range of soils, but they generally prefer well-drained loam versus soils dominated by sand or clay. Sandy soils can be too dry, especially during drought, and when trees are young before their roots have developed; clay soils, especially those that are seasonally wet and have poor drainage, are not really suitable for most fruit trees, though anecdotally pears are known to do better on wetter soils than apples.

The first year I arrived on my property, in my excitement I quickly fall-planted a bunch of trees in a convenient spot, and came to realize the following spring that I had planted in a seasonally wet area, where the temporarily high water table stunted and or killed many of them. It was frustrating (and time-consuming) to have to dig all the survivors up and plant them elsewhere---lesson learned.

Soil pH and fertility are also important factors. Many of our soils are excessively acid, and may need to be limed in order to support healthy tree growth. An ideal pH range for most fruits is about 6.5-7, though you can get away with a somewhat broader range. This can be determined through a basic soil test (*https://soilhealth.cals.cornell.edu/testing-services/* is one option), which will also tell you if there are any significant nutrient and or mineral imbalances in your soil. I have generally found this to be less important at the outset, when trees are young, and so in most cases can be worked on slowly over time as needed, or as time permits. As for lime, after receiving soil test results and finding that my soils were excessively acid (about 5.5 to start), I have been spreading dolomitic lime every other year or so, which also provides needed magnesium.

Access:

In order to remain healthy and productive, fruit trees require semi-regular attention, especially when young. Newly planted trees require regular watering, so a ready water source is required, and all trees need to be monitored for insects, disease, and protected from predation by herbivores. Trees need to be pruned, fruit crops often need to be thinned, and also monitored in order to ensure that harvest takes place at the appropriate time in order to maximize flavor and storage. None of this can happen if your trees are sited somewhere far away from you, or even just inconvenient for

continued on page 21

Ask A Professional

PETER SMALLIDGE

Peter Smallidge

Landowner questions are addressed by foresters and other natural resources professionals. Landowners should be careful when interpreting answers and applying this general advice to their property because landowner objectives and property conditions will influence specific management options. When in doubt, check with your regional DEC office or other service providers. Landowners are also encouraged to be active participants in Cornell Cooperative Extension and NYFOA programs to gain additional, often site-specific, answers to questions. To submit a question, email to Peter Smallidge at pjs23@cornell.edu with an explicit mention of "Ask a Professional." Additional reading on various topics is available at www.forestconnect.info

Managing the Risk of Windthrow After Forest Harvesting

Question: Do I need to worry about trees blowing over if I have a harvest? (D.W., Southern Tier Chapter)

Answer:

In our northeastern hardwood forests, a common factor in the demise of a tree is the effect of wind. Other factors, such as insects and diseases, may increase the likelihood that a tree succumbs to wind. Harvesting might increase or decrease the likelihood that a tree will blow over in the wind. Wind happens almost every day. Windthrow in trees, the uprooting of a tree as a result of wind, is thus pervasive (Figure 1). The range of combinations of intensity and severity of wind damage to trees could make for a long discussion, so here windthrow will be addressed primarily in the case of low-intensity and low-severity disturbance causing the uprooting of one or a couple trees.

Woodland owners are justifiably shocked when one of their trees blows over. The bigger the tree, the bigger the shock. The majority of literature on windthrow as it relates to harvesting and management originates in conifer dominated forests in eastern Canada, the Pacific Northwest and Canadian Rockies, and the United Kingdom. In many cases these are conifer plantations. It happens that conifers, spruce and fir more so than pine, have a higher risk than most hardwoods. Much of the content of this article is developed from personal observation and from literature cited at the end. People will have different experiences, but although most harvests have a windthrown tree or two, so do most woodlots without harvesting.

The Context and Perspective for Windthrow

Several factors, described below, influence whether a tree is likely to windthrow. Harvesting may increase or decrease the likelihood. It's reasonable to think about windthrow management as risk management. Here, risk is defined as the probability of an event that causes damage. The goal then is to reduce the likelihood that a tree retained in a harvest area will blow over. Owners might choose one of three perspectives: disregard the risk and accept what happens, attempt to share the loss through insurance, or take efforts to reduce the loss.

Some woodland owners will align with the strategy to "accept what happens." This is reasonable, particularly for owners who enjoy their woodlands from a biodiversity and wildlife perspective. Windthrow is common in managed and unmanaged woodlands. It provides a unique function of soil mixing, known as both bioturbation and floralturbation (Figure 2). In addition, the gap created by the wind will provide added sunlight to the forest floor that enhances vegetative growth. The tree and its crown are notably significant additions of coarse woody debris that can be left for

Figure 1. Windthrow, the uprooting or a tree, can happen in all woodlots. This old-growth northern red oak "blew" down on a day there was no perceived wind. Photo by Dr. Jeffrey Ward.

Figure 2. Many northeastern patterns and processes relate to windthrow. This picture illustrates how windthrow can move rocks to the surface, and the unutilized stem and crown become coarse woody debris.

ecological benefit, or extracted in whole or part for some type of utilization.

Few woodland owners obtain insurance to cover against losses such as from wind. These insurance policies might be more likely for large acreage or high value ownerships. Some owners might qualify for special tax treatments following a catastrophic wind event. If you think you fall in this category, more information is available at *www.timbertax.org* with a search for "wind" or "casualty loss."

Other owners have objectives that connect them more directly to a productive output from their land, whether commercial or personal. These owners may be more likely to take efforts to reduce the risk and reduce the loss. First managing the risk and reducing loss starts with identifying the hazard or agent, in this case wind. Second assess the likelihood of damage and the consequences or costs. Third describe the types of actions possible and fourth implement a strategy.

Why Do Trees Blow Over

At the tree-level, the factors that influence vulnerability to wind, the causal agent, include the pressure of the wind on the tree and the above-ground weight of the tree. Wind pressure depends on wind speed, crown surface area, and crown permeability. Interestingly, because branches and leaves can bend and reconfigure with wind, the effect of wind is significantly less on a tree crown than on a solid surface. For the engineers and mathematicians, the drag on tree crowns is directly proportional to wind speed, but on solid surfaces the drag is the square of wind speed.

A tree also has factors that help it resist windthrow and thus lessen its vulnerability. These include soil shear strength, the ability of the roots on the windward side (the side towards the wind) to endure tension or pull, the ability of the roots on the leeward side (the side away from wind) to endure compression and forming a hinge, and the weight of the roots and soil.

Topography can influence the intensity of the wind and the potential for turbulence. Higher elevations have stronger winds. Abrupt ridgelines, perpendicular to the flow of wind, may result in more turbulence on the leeward side of the ridge.

Soils factor prominently into the likelihood of windthrow. Soils that result in relatively thin rooting layers have less total mass of roots plus soil, and are less able to counterbalance the above ground weight (Figure 3). Thin rooting layers may occur in poorly drained soils or on shallow soil depth over a root restricting layer. However, fertile soils, with the wrong species in the wrong topography can increase the risk of windthrow if a dense stand develops where trees prioritize height growth over diameter growth resulting in slender or "spindly" trees. A ratio of height to diameter, described in the next section, is one predictive factor.

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Figure 3. This eastern hemlock was growing on a poorly drained soil at the toe of a slope. The root mat is thin, suggesting poor root development.

Trees have some capacity to acclimate to the effects of chronic wind patterns. The uniform stress hypothesis of tree response to wind predicts that a tree will grow wood around the circumference of the stem to balance the effects of stress along the surface of the stem. Thinning, or prior crown exposure, might be the process that results in more pronounced taper of stems of trees that are upper canopy or in thinned stands (Figure 4).

Figure 4. Note that the left-most sugar maple, with a red ribbon and paint, has more flare than the sugar maple in the center. The large red oak on far right and adjacent sugar maple were open grown and have pronounced taper.

Predicting Whether a Tree Will Blow Over

No single factor predicts whether a tree will fall. Several factors are relevant and these factors need consideration when owners work with their forester and logger to reduce the risk of windthrow.

Abundant rainfall that precedes a wind storm may result in windthrow. Saturated soils reduce the shear strength of the soil and thus the lifting of the root ball. Sandy soils have greater shear strength than clay soils. The author of one study reported that twice as much power was required to tip a spruce growing on sand versus clay. Owners can't change the amount or frequency of rain, but know that large rain events can happen, the owner can ensure that the higher risk areas described below are given special attention.

Tree species growing on a favorable soil for their needs, even if sometimes saturated, will have better root development. These roots will hold more soil, increasing their mass, and providing roots with better capacity for tension and compression under a wind load. The calculations of benefit provided by a tap root don't suggest a benefit, but a study testing stress on trees found scotch pine with a tap root was more difficult to tip than similarly sized Norway spruce.

Root health and branching on the leeward side of the tree, which we can't see, is important. Considering roots on the windward and leeward side, windthrow is more likely a result of failure on the leeward side. A hinge is formed in the roots that allows the root ball to rotate. The hinge is less likely to form with large diameter roots and the further roots branch from the stem (Figure 5).

Higher levels of stand density, the number of trees per acre, in young stands may reduce the likelihood of windthrow until the stand matures. With maturity comes height and a higher incidence of internal decay, both of which are factors. Further, high density stands, especially conifers, will develop

slender trees with a high ratio of height to diameter (RHD). Calculate RHD as height divided by diameter, both in the same units (feet or meters give the same score). Regardless of tree height, stems near an opening and with a RHD less than 80 are less vulnerable to wind than trees with RHD 80 – 100 or 100 - 120. The pattern is the same for taller trees, but taller trees have slightly greater vulnerability. In one woodlot where I recently measured tree heights, the tallest trees averaged about 96 feet. The average diameters were about 18 inches (1.5 feet). Those trees had a RHD of 64; less sensitive to wind than more slender trees.

Stand density is also beneficial because of its ability to dissipate the force of wind and the support provided through the physical interlocking of roots. Trees in a widely spaced stand may have double the wind force than in a closely spaced stand. Seed tree harvests (~ 7 – 10 trees per acre) have reported more windthrow than shelterwood harvests (~ 20 to 45 trees per acre).

Harvesting and Windthrow

From this information on wind in forests, harvesting can influence the likelihood of windthrow. This influence might be to increase or decrease the potential for loss.

Stand thinning can increase or decrease risk. An increase of risk would happen if there is a single thinning that significantly reduces stem density later in the life of the stand. The trees are taller, have not developed windfirmness. They have a reduction in the buffering of wind and loss of root interconnections. Unfortunately, no studies were found to assign thresholds to what constitutes a significant reduction in stand density. Further, the risk would also increase where the thinning removed primarily upper canopy trees and left lower canopy trees. The upper canopy trees typically have larger diameter and lower RHD. They have acclimated to more wind exposure, have greater stem taper in the butt log, and likely have a better root system.

Figure 5. Note this root ball is relative small for the size of the tree, and the ponding of water. This tree suffered from a thinning late in the age of the stand, and growing on a soil that didn't allow the root system to flourish.

Stand thinning may reduce the risk of windthrow when it starts relatively early in the development of the stand to allow for adequate diameter growth and healthy roots. This may be more important on fertile soils that would otherwise develop dense stands of slender trees with limited exposure to wind that become more vulnerable with age.

Partial harvesting that creates moderate to large circles, corridors, or patches should position those openings to minimize wind exposure. A patch opening near the crest of a sharp ridge might increase turbulence on the leeward side of that ridge (Figure 6). Thus, thin the leeward side several years before or after the harvest on the windward side. One reported study noted that the best predictor of windthrow was proximity to skid trails. In poorly drained black spruce stands, strip cuts with a north-south orientation had about 18% mortality compared to almost 40% mortality on corridors with

continued on next page

Figure 6. This 100 foot wide strip clearcut was on the west side (windward) of near the crest of a round-topped ridge. The strip runs north-south. A buffer was left on the leeward side (right side of pic) and no harvesting was done on the leeward side of the ridge for another five years.

a northwest-southeast orientation. Note that (1) all cutting inherently creates openings that alter wind flow and (2) black spruce on poorly drained soils are notoriously susceptible to windthrow.

Because of the importance of roots, harvesting that damages root systems may increase windthrow risk. Damage to the windward side would limit root tension capacity and damage to the leeward side would limit root compression capacity. Because winds vary in direction, and turbulence varies almost by definition, it is root damage in general that should be avoid. The role of tension and compression are less relevant if the goal is to limit damage to roots.

A tree's RHD and root growth depend in part on the species, the soil where it is growing, and it's freedom from competition. Tree selection during thinning should retain species that are suited to the microsite given the assumption they will have better diameter growth (and lower RHD) and better root growth.

Trees growing on thin mantles of soil, either wet or dry, should receive particular attention. One option is to create a patch on the site of the thin soil and regenerate that area. Trees on these soils are increasingly vulnerable with age and height. Increased age also correlates with higher levels of stem and root decay. Alternatively, avoid partial harvests on these sites, or thin lightly while retaining a well-stocked buffer.

Figure 7. Spring poles, saplings, or small trees arched under tension are particularly dangerous to remove. Special techniques taught in Game of Logging training help keep cutters safe.

Safety

There are at least two safety considerations somewhat unique to windthrow. First, a tip-up mound is stable based on the distribution of weight (see Figure 3 for an example of instability). There are several examples of trees cut from the stump and the root ball suddenly drops back to the ground. Unfortunately, one story reports the loss of a child playing in the pit below the mound. Second, windthrown trees are typically under unusual tension and compression (Figure 7). They may be wedged between trees with both vertical and lateral force. Anyone trying to remove a stem should be particularly cautious. Make test cuts to observe how the tree will respond. Be alert for catapulting of a stem in an unexpected direction once the stem is severed.

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Wild Things in Your Woodlands

Karen Ceballos

Wild Turkey (*Meleagris gallopavo*)

The Eastern wild turkey is a large, ground-feeding bird. Adult males, called "toms" or "gobblers", have a dark glossy black-brown body, red, blue, and white skin on their heads, and a long "beard" of hair-like feathers on their chests. Males have spurs on their legs that can be up to 1½ inches long and are used to fight other males. Toms generally measure 2½ to 3 feet tall and weigh between 16 and 20 pounds. However, they can weigh up to 25 pounds. Female turkeys (hens) are smaller than toms, usually measuring 2 feet tall and weighing 9 to 12 pounds. Less ornate than toms, hens have a rusty-brown body and a blue-gray head, and almost all hens lack beards or leg spurs.

While Benjamin Franklin was unsuccessful in making the turkey the United States' national bird, the turkey still holds an important place in American culture and environments. The wild turkey is native to North America and is one of only two domesticated birds native to the New World. Habitat loss and overhunting led to massive population declines in the 1800s, and the last original wild turkeys disappeared from New York around the mid 1840s. Wild turkeys did not return to the state until 1949, nearly 100 years later, when wild turkeys from Pennsylvania crossed the border into New York. Thanks to reintroduction efforts, an estimated 250,000 to 300,000 wild turkeys now roam New York woodlands. They generally form single gender flocks of 5 to 50 individuals, with home ranges varying from 400 to 2,000 acres. Turkeys need a variety of habitats to support their feeding, breeding, and roosting needs, so ideal ranges include a mixture of woodlands, fields, meadows, brush lands, and swampy forests.

Wild turkeys are omnivorous, and their diet varies greatly with what's available in the season. In spring and summer, adults feed on various vegetation (tubers, roots, flowers, fruits), insects (grasshoppers, dragonflies), other invertebrates (snails), and even small vertebrates (salamanders, frogs, small snakes). In midsummer, two or more broods will often combine, forming a flock that will roam over wide areas in search of food. In late summer and early fall, flocks will spend more time in the woodlands foraging on fruits, seeds, and nuts like beechnuts and acorns.

During the winter, turkeys will merge into large flocks, sometimes exceeding 200. They move around less, choosing to stay around valley farm fields where they can eat waste grain and manure, or near spring seeps usually free of ice and snow. They eat vegetation, fruits and nuts left over from the fall, scratching through 4 to 6 inches of snow to find food if needed. Turkeys will spend a week or greater roosting if a severe winter storm hits, and can survive up to two weeks without food.

Turkeys can walk, run, fly, and even swim. They can run at 12mph and fly at speeds around 40 to 55 mph. They have keen hearing and superb eyesight. This is crucial for the survival of young turkeys, which are heavily preyed upon by mink, weasels, domestic dogs, coyotes, raccoons, skunks, and snakes. Sixty to seventy percent of poults (young turkeys) die during their first four weeks of life. Their vulnerability is unsurprising considering their only defense is to scatter and remain still

until their mother gives the all-clear signal. Mature turkeys are preyed upon by foxes, bobcats, fisher, coyotes, and great-horned owls.

Harkened by the tom's iconic "gobble," breeding season begins in late March or early April and continues through early June. Toms will stake out an individual breeding territory and gobble loudly to attract females and repel competing males. If a female approaches, the tom will begin his courtship dance, fluffing out his body feathers, fanning his broad tail, dragging his wings, and strutting about. If he passes inspection, mating occurs and then the hen departs alone to nest. The male continues calling and dancing, and will try to mate with as many females as possible.

After leaving the dance floor, the hen seeks out a wooded or brushy area to create her loosely formed nest, a shallow depression in the soil lined with dried leaves. Areas with dense brush, tall grasses, or plenty of fallen trees or branches make the best nesting habitat. In the absence of suitable nesting habitats or poor weather conditions, females can store sperm and delay fertilization for up to 8 weeks. She'll lay 10 to 15 cream colored or light brown eggs, which will hatch around late May or early June. Soon after, the hen moves her young (poults) to grassy areas where they can feast on insects. If the poults survive, they will leave their mothers and join hen and tom flocks in the fall.

Since 2000-01, wild turkey populations have been gradually declining. The causes of this decline are still unknown, but has been attributed to predator increases, poor habitat quality, bad weather conditions (wet springs and summers, severe winters), and natural population contraction as turkey populations shrink to levels that can be supported by current environments. Another factor may be the arrival of a new disease in the U.S.: Lymphoproliferative Disease Virus (LPDV). LPDV is a tumor-forming virus affecting ground-feeding fowl, and was first confirmed in NY wild turkeys in 2012. Fortunately, preliminary research shows that the while the infection is quite widespread and common, the development of tumors in the internal organs and skin rarely occurs. LPDV is most likely not the main cause for turkey declines, but much is still unknown about the disease.

You can help support turkey populations by providing a variety of habitat types and plant species on your land. Keeping in mind that their home ranges can be quite large, think about your land and the surrounding area. Are there good brooding habitats with grasses and forbs that will host plenty of insects for poults to feed on and nearby brushy escape cover? Is there good nesting habitat with low brush cover? If you're logging an area, consider leaving and scattering the tops of trees to provide cover for nesting turkeys. Lastly, is there good winter feeding habitat? You may want to plant food plots of corn, sorghum, millet, sunflower, and buckwheat, or simply support local dairy farms, which make up some of the best turkey winter feeding grounds. For more information on creating wild turkey winter habitat, visit *http://www.dec.ny.gov/animals/7279.html*.

You can also help wildlife biologists monitor wild turkey populations by taking part in the NY DEC Winter Wild Turkey Flock Survey conducted January through March. If you've sighted wild turkeys in your area and want to help the DEC monitor the health of wild turkey populations, visit *http://www.dec.ny.gov/animals/48756.html*. You can also help during August, when a similar survey is conducted to assess the reproductive success of wild turkeys this year *http://www.dec.ny.gov/animals/48732.html*.

Karen Ceballos is a sophomore majoring in Environmental Science and Sustainability at Cornell University. She is also the Program Assistant for the New York Master Naturalist volunteer program. Is there a certain animal that you would like to see featured in an upcoming "Wild Things" column? If so, email Kristi Sullivan at kls20@cornell.edu

Randall's Heritage Maple: *Grounded in History, Looking Towards the Future*

By Eric Jenks

Randall's Heritage Maple is a Western New York staple, making maple syrup in Genesee county since 1848. The family business is currently run by Eric and Eleanor Randall. "It's been 173 years of insanity," laughed Eric Randall, a retired professor who previously served as the Dean of Natural and Social Sciences at the State University of New York at Buffalo, and Dean of the College of Science at Edinboro University of Pennsylvania. While a commercial operation, the farm is also positioned as a demonstration and research center for those interested in maple syrup production. "We had one of the first high efficiency evaporators, and we're in our 9th year of using it. We use a high vacuum system with 5/16th tubing." To keep their mainline from freezing in the typical cold weather of sugaring season, the Randall's buried 1,800 feet of theirs. The approximately 2,700 taps for their operation are split between two different sugarbushes; one at their location in Genessee county, and the other in Wyoming county.

In keeping with their focus on being a demonstration location, the Randalls have recently made some upgrades to their facility and have plans for their forested property. "We have an unbelievable maple woodlot," said Randall. "It's been under a forest management plan since 1941. We're currently working on updating the management plan with a DEC forester from region 9. We do a lot of education on the property, and we've had a lot of field studies at our place where we talk about the things to do to your property. I thought we should take our own advice and update our own plan."

Eric Randall, son-in-law Rob, and grandson Robert tapping a maple tree. All photos courtesy of the Randall Family.

One major change for their sugaring operation is a new reverse osmosis (RO) unit, even though theirs was still in good working order and less than a decade old. "The technology has increased by leaps and bounds," said Randall. "Just the changes and the evolution of membranes is head and shoulders in the last ten years. It's the first time that I've said to myself, maybe it's ok to upgrade. The technology has changed in recirculation too. The older unit was slower, the new one has a better recirculation pump. It's also smaller with higher efficiency."

Another change for the Randalls has been tackling online ordering. "2020 was an odd year with the pandemic," said Randall. "It was a fast season, and we were just gearing up for Maple Weekend when everything started to shut down. We market most of our syrup retail at the sugarhouse, but it's been a whole lot better than it could have been. We get calls from our website, and this year we have shipped a lot of

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syrup. People stop because we do have that web presence and because of our sign on Route 20."

For those looking to learn more about the art of making maple syrup, there are plenty of online resources, though Randall cautions that you should stick to trusted resources. "My wife and I pay attention to a lot of different forums out there, and the amount of misinformation is astounding," said Randall. "Just the amount of bad advice that gets shared as fact is scary. You're manufacturing food, and it should always be made using good sanitary equipment, and the product itself should always be of top quality. Cornell has such a wealth of information online, there's a great series out of Vermont, the Future Generations University in West Virginia, etc. My son, (Jesse Randall) runs YOOPER Forestry in Michigan, and they have been putting educational resources out there for all level of producers."

Randall also believes that maple proucers need to keep promoting what they do, as the Maple Weekend will not be taking place this year due to the Covid-19 pandemic. "It's important to keep advertising the idea that maple producers are alive and well," said Randall. "Last I checked the trees aren't effected by the pandemic, and it's important for the public to know that we've got the same wonderful product available, socially distanced, for them to enjoy. "Just call your favorite sugar maker, and they'll make arrangements to get the product."

For more on Randall's Heritage Maple, visit their website here: *https://www.randallsmaple.com/*

Eric Jenks is a freelance writer with Morning Ag Clips, LLC. Morning Ag Clips is now managing the Tree Farm column.

Above and below: Randall family sugar house.

Woodland Health

A column focusing on topics that might limit the health, vigor and productivity of our private or public woodlands

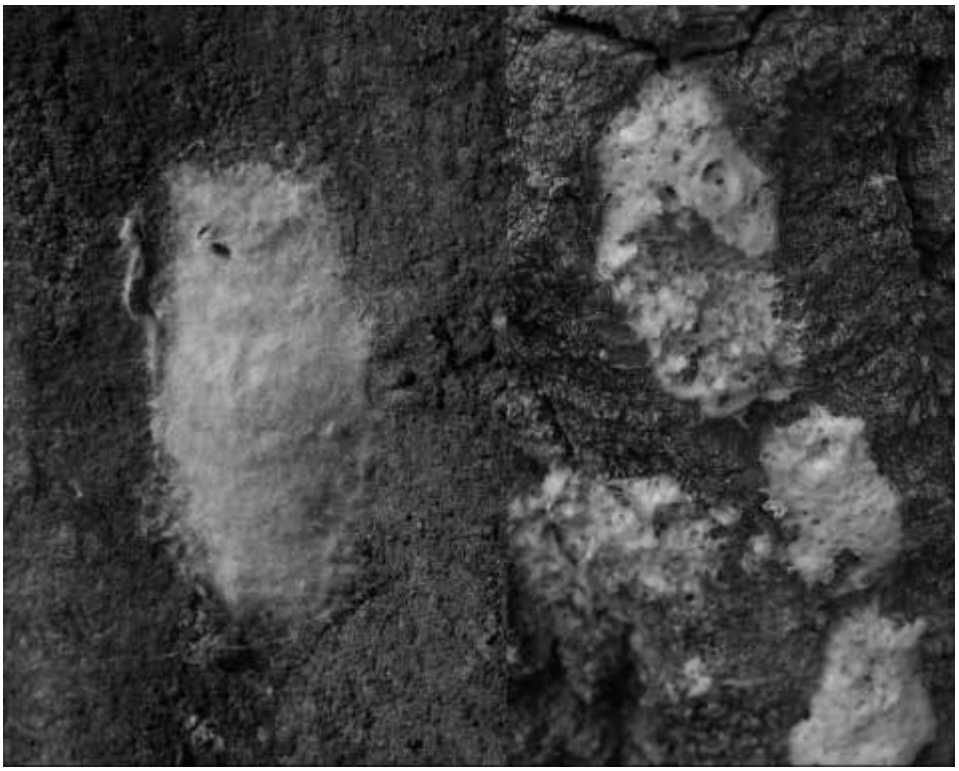
Coordinated by Mark Whitmore

Planning for Gypsy moth

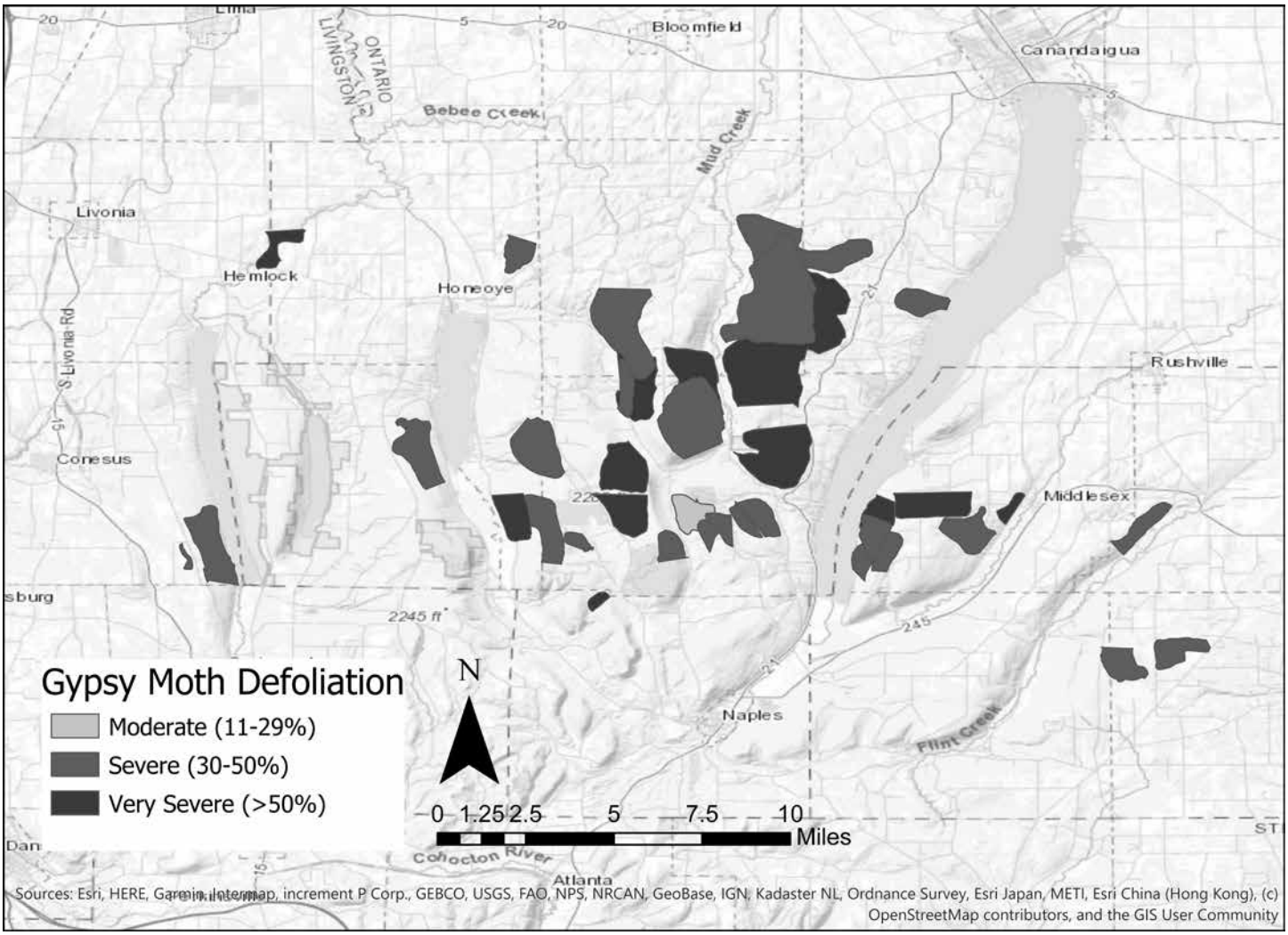
By Mark Whitmore

Amongst the myriad of reasons 2020 was such an interesting year, I found the increase in gypsy moth (GM) defoliation to be almost calming. But this is likely not the case for those who have contacted me concerned about the potential impact of GM on their woodlot. For many, this was the first time in many years that they have seen such seemingly widespread defoliation. Where I live, near Ithaca, I recall the first wave of GM defoliation in the mid 1980's. At that time defoliation was widespread and I recall a number of large red oak perishing after just three years of defoliation at one of my research sites. Since that time, largely due to the proliferation of fungal and viral pathogens, I've found a only a few stray GM caterpillars and an egg mass here or there, but they have not been the cause of noticeable defoliation and certainly no tree mortality. But this is certainly not the case elsewhere in the state where defoliation has been evident over the years in the southern Catskills and Hudson River Valley, up to the SE Adirondacks as well as a few years ago in the Allegany State Park. Further south in Pennsylvania GM has been a persistent problem, with applications of pesticides made every year, and this year some 200,000 acres are planned for treatment.

So what's going on? The quick answer is that I'm not sure, but there are some indications based on past experiences in New York and Pennsylvania. First let's quickly cover some history and biology so we are all on the same page. Gypsy moth (*Lymantria dispar*) is an invasive non-native insect from Eurasia brought into the Boston area in the late 1800's which subsequently escaped captivity. The story of its introduction makes for fascinating reading and involves an entrepreneurial attempt to create a silk industry in America by a brilliant astronomical illustrator and amateur entomologist, Étienne Léopold Trouvelot. Needless to say the mistakes made by Mr. Trouvelot have led to GM being one of the most important pests of hardwoods in the east and serve as an enduring lesson about the impact of invasive species. GM impact is so great that there is a continuing suppression effort sponsored by the US Forest Service in cooperation with states to "slow the spread" along the expanding infestation front. This unique multi-state project to address area-wide pest issues is unique in the United States and involves sites arranged basically in a band from eastern Minnesota and



Left: Fresh Gypsy moth egg mass. By Ferenc Lakatos, University of Sopron, Bugwood.org. Right: Gypsy moth egg masses. By Milan Zubrik, Forest Research Institute - Slovakia, Bugwood.org



Map of the heavily defoliated stands in western NY. Map produced by NYSDEC.

western Wisconsin through northern Illinois and Indiana, Ohio, West Virginia, Virginia, Kentucky, and North Carolina.

There is only one generation a year of GM. Eggs are usually laid in masses on the trunk of a tree or other smooth surface like on vehicles or trailers. This of course enhances their capacity to disperse aided by humans. I'll admit that I can count on only one hand the number of times during the 80's that I inspected my vehicle before driving to new locations. True confession.

GM egg masses are about 1 by 2 inches and covered by tiny brown hairs that can irritate if contacting sensitive skin. Eggs hatch in early spring and the early instar larvae (about ¼ inch long) make a perilous journey to find and feed on newly emerging leaves. GM feed on a wide variety of trees but they particularly like red oaks. This feeding behavior can be extremely damaging because it does not allow the trees to put on leaves for photosynthesis unless they have enough reserves to for another flush of leaves later in the season. This is why repeated defoliation can kill trees; their photosynthetic reserves are dimished, especially on poor sites, leading to mortality after two or three years of defoliation. The larvae will disperse from early on in their lives by hanging from silken threads and then carried by wind to another host tree. They feed during the day when young, switching to nocturnal feeding when older. The hairy larvae are readily distinguished from other caterpillars as they drop in your drinks in the backyard on a June evening by the pairs of blue spots behind the head that change to red spots toward the tail. Larvae can grow from two to four inches in length and as they age they will feed on a greater diversity of trees, including some conifers like hemlock and pine. Larvae are also particularly prone to infection by fungi and virus, such that a wet spring, which favors these diseases, will cause significant mortality and even stave off a potentially harmful defoliation year given high egg mass densities. GM move to protected areas on a tree or in the soil to pupate and after a couple weeks emerge as adults. Predation by white-footed mice on pupae has been shown to be important at low GM population levels.

Upon emerging as adults in late June to early July, GM have no digestive

continued on page 18

system and therefore their life is short, just a week or so, requiring a super effective method for them to find a mate and reproduce: pheromones. GM females are flightless and produce pheromones—highly specific "designer" chemicals to attract a male. Their scent can be effective over remarkably long distances, miles, and is used in traps to identify the leading edge of GM populations in the "slow the spread" program. Pheromones are also used to disrupt GM mating at the leading edge by aerial application. One of the more entertaining aspects of these benign chemicals, demonstrating their effectiveness and persistence, is that when forest entomologists have a meeting in summer as GM males are flying, it's easy to pick out those who have worked on GM projects because even years after they have finished their work GM males will be fluttering around them. I've been told this is particularly fun at weddings. Entertaining living through chemistry!

Back to what is going on in NY. My overriding question is whether this is just a temporary situation or if the paradigm has changed and we will be seeing these defoliation events on a regular basis. One of the most important reasons PA forests are chronically infested, is the presence of rocky ridges heavily stocked to red oak. These sites require treatment to avoid widespread mortality. We have mostly been protected in NY because heavily stocked red oak stands on stressed sites are not as prevalent nor contiguous. The other possibility is that there has been a breakdown in the natural controls that have been effective in the past. Wetter and cooler weather in spring favors fungal and viral diseases and can even take down populations that are poised to be a problem.

Rather than wringing your hands waiting to see what happens next, I think it prudent for woodlot owners to be aware of their exposure, or proximity to current GM infestations, their damage threshold or management objectives, and management tools available.

NYSDEC has done a great job of tracking areas of GM defoliation and found 2020 defoliation mostly in western NY (See map). The other thing you can do right now is get out into your woods with some binoculars and count GM egg masses to determine how severe the defoliation might be this spring. NYSDEC has created a detailed "Field Protocol for Sampling Gypsy Moth Egg Masses" (*https://www.dec.ny.gov/docs/lands_forests_pdf/gmprot2005.pdf*) to help you determine if GM density will be a problem given your management goals. Basically, if there are more than 500 egg masses per acre there will be noticeable defoliation and more than 1000 per acre predicts likely tree mortality. The trick is learning what a new egg mass looks like as opposed to an old one and the best way to do this is to get out there and squish some egg masses. Old masses will look ragged, have obvious signs of eggs having hatched. Fresh egg masses will be smooth (at least as smooth as something fuzzy can look) and when squished will ooze the insides of fresh eggs. This last part is very satisfying, and although scraping egg masses off of forest trees in a woodlot won't really impact GM populations, if you've some dwarf fruit trees the time spent doing this may be very effective.

Treatment options in a forest are limited in NY. Aerial spraying with Bt (*Bacillus thuringiensis*) is about all we have. In other states there is the possibility of using an insect growth regulator, or IGR, that is marketed under the name "Mimic." This is not registered in NY but is used in PA where they try to limit applications to only problem spots because it impacts not only GM but many other non-target insects as well. The advantage is that is persists longer than Bt, which is prone to degradation with exposure to sunlight. Another option is a product called "Gypcheck," which is a formulation of virus but is only available from the US Forest Service and must be ordered in quantity a year in advance, not really an option for a small woodlot owner. If my woodlot was threatened with another year of severe defoliation and potential tree mortality (using the egg mass counting technique) I would be talking with my neighbors right now to see if you could gather together to hire an aerial applicator for Bt. Costs would be significantly reduced with a larger application area.

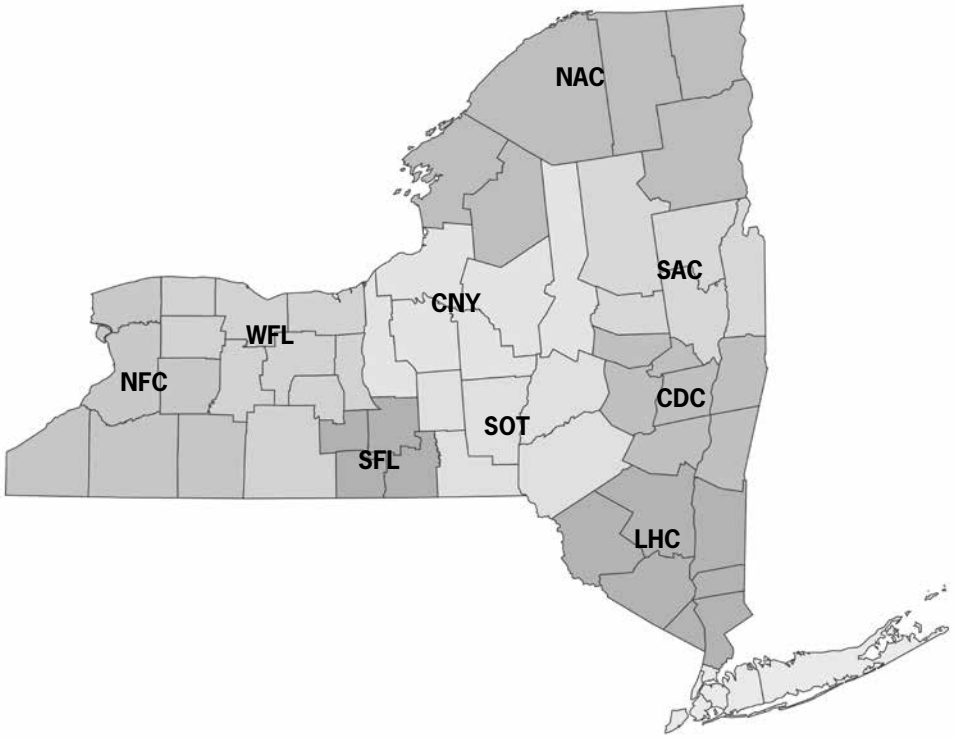
Mark Whitmore is a forest entomologist in the Cornell University Department of Natural Resources and the chair of the NY Forest Health Advisory Council.

NYFOA Chapters

JEFF JOSEPH

We received a request recently from a new member to explain the organization, geographical boundaries, and acronym designations of NYFOA chapters:

- While the original bylaws at the time of NYFOA's founding in 1963 called for chapters to be created at the county level, in the mid-'80s, regional chapters began to be formed;
- NYFOA is currently divided into 10 chapters, covering the entire state excepting New York City and Long Island;
- Each chapter nominates a member to serve on the NYFOA board of directors;
- Chapters function both as independent entities, with their own meetings, events, and newsletters, as well as collaborative components of the broader organization as a whole;
- The 10 chapters (and their acronyms) are as follows (see map):



Allegheny Foothills (AFC): Allegheny, Cattaraugus, Chautauqua

Capital District (CDC): Albany, Columbia , Greene, Montgomery, Rensselaer, Saratoga, Schenectady, Schoharie

Central New York (CNY): Cayuga, Herkimer, Madison, Oneida, Onondaga, Oswego

Lower Hudson (LHC): Dutchess, Orange, Putnam, Rockland, Sullivan, Ulster, Westchester

Niagara Frontier (NFC): Erie, Niagara, Wyoming

Northern Adirondack (NAC): Clinton, Essex, Franklin, Jefferson, Lewis, St. Lawrence

Southeastern Adirondack (SAC): Fulton, Hamilton, Saratoga, Warren, Washington

Southern Finger Lakes (SFL): Chemung, Schuyler, Tioga, Tompkins

Southern Tier (SOT): Broome, Chenango, Cortland, Delaware, Otsego

Western Finger Lakes (WFL): Genesee, Livingston, Monroe, Ontario, Orleans, Seneca, Steuben Wayne, Yates

- More information about NYFOA chapters, including calendars of events and archives of past newsletters, can be found on the website, at *www.nyfoa.org/chapters*

Welcome New Members

We welcome the following new members (who joined since the publishing of the last issue) to NYFOA and thank them for their interest in, and support of, the organization:

Name	Chapter	Name	Chapter
Madison Benedetti	CDC	Rock Ridge Outdoor	
Matthew Case	WFL	Club LLC	CDC
Roy & Jan Cooley	CNY	Jeff Schutt	SFL
Thomas Donohue	SAC	Daniel Schutt	CNY
Brock Gibian	SFL	Bryan Severino	WFL
Judith Harper	SAC	Stuart Urban	WFL
Charles Harrison	LHC	Philip Von Bargen	NAC
Elizabeth Korchin	LHC	Karl A. Withers	WFL
Robin & Doug Miller	WFL		

you. As the old proverb says, "the best fertilizer is the farmer's footsteps."

My orchard is a stone's throw from my back door, and it still has been neglected more times than I would care to admit over the years. Life *will* get in the way at times, so set yourself up for success by making it easy and convenient to make regular visits to your young trees. Wandering around in my orchard and idly checking up on things during summer evenings is one of my favorite ways to wind down at the end of the day.

What kinds of fruits to grow?

I started out wanting to grow everything, and to a certain extent, did. Most of that is long gone. What I quickly learned is that there are countless other species out there—mammals, birds, insects, bacteria, and fungi—that also want to eat *my* fruit, or even worse, the trees themselves. I started out with apricots, plums, cherries (sweet and tart), peaches, pears, Asian pears, and apples. The stone fruits were all very precocious, flowering and setting fruit at a young age. This was mostly very delicious fruit—*far* better than standard supermarket fare. Unfortunately, they also were all quickly overcome by insects and disease. What I came to learn is that the domesticated fruit trees in the genus *Prunus* were all susceptible to many of the same diseases that afflict our native *Prunus*—black, choke, and pin cherries. As my orchard is situated at the edge of my woodlot, and the edge of my woodlot is in an early-successional stage, each of these native cherries are found there, and they rained down a host of bacterial and fungal diseases on my young orchard.

In the end, many of these trees simply died outright; others were weakened so significantly that I was forced to cull them. The apricots went first, followed by the cherries, then the plums. I held out hope for the peaches for quite a while longer, as the fruit was just too delicious to envision living without. The last of them were finally culled last year, leaving me with only the most resilient—the apples, pears, and Asian pears. So, long story short, for my orchard to be low-maintenance, and still able to produce healthy fruit, I have chosen to limit things to the two genera (*Malus, Pyrus)* that are able to fend for themselves without substantial chemical intervention, which may or may not be a viable choice for your situation. Which leads to the next topic….

Warren pear. One of the most flavorful I have grown, and seemingly immune to most insects and disease.

Pesticides:

From the outset, it was my intention to limit my use of pesticides to organically approved ones, as I never really understood the logic of spraying highly toxic chemicals on anything you intend to eat. Back a century ago, commercial orchards sprayed untold amounts of lead arsenate on their trees to keep the fruit cosmetically pristine for the market. It worked, but many old orchard sites are also biohazards even today, with high levels of lead and arsenic in their soils. Times have changed, and the available arsenal of chemicals may have improved, but the fact remains, most chemicals devised to kill insects remain toxic to humans. The other side of this coin (as illustrated in my experience above) is that many species and varieties of fruit will not produce viable fruit—or even survive—without ongoing chemical intervention. You'll have to do your own research and come to your own conclusions about cost versus benefit here, but I don't regret my choice to forego conventional pesticide use.

So initially, I did substantial research on organic spray regimens, and purchased a backpack sprayer for the job. When the trees were young (and small), this proved manageable, but as the trees matured, they got BIG quickly, and I soon found myself spending many an hour perched precariously on the very top of a tall orchard ladder trying to ensure that the sprays would reach to the top branches of the trees. And much of it needed to be done again and again throughout the growing season if it were to have the desired effect of producing picture perfect fruit.

Unsurprisingly, this stopped being fun pretty quickly, which was when I came around to my current orchard philosophy of "survival of the fittest," in which trees are trialed early on to see if they can 1) survive without chemical intervention of ANY sort, and 2) still produce fruit that is cosmetically acceptable and that has good flavor. This ruthless approach has been the key to creating a low-maintenance, high reward orchard, as any variety that

continued on page 22

Apple buds preparing to bloom, and hopefully to avoid late spring frost.

cannot meet these criteria is quickly culled. This was quite painful at first, as I was forced to cut down or re-graft many large trees, but has been fully worth it, as it has allowed me to focus on maximizing *quality* versus sheer *quantity*. It also has tailored the varieties that I currently grow to only those best suited to my site, with its unique microclimate and pest challenges. I now harvest an abundance of fruit with NO sprays of any kind; it varies by cultivar, but I would say my trees now produce between 40 and 90 percent of cosmetically acceptable quality fruit, at least for home use. And the percentages keep going up in my favor as I continue to trial and cull.

Protecting trees:

All fruit trees can benefit from protection from predation and harm, but young trees are especially vulnerable. Newly planted trees will need to be fenced or caged to be protected from deer, who will aggressively tear at them while consuming the terminal buds in winter, or the foliage and fruit during the growing season; I have also had bucks come and use small trees as rub sites, creating substantial wounds in the trunk bark. In the winter, both voles and rabbits will eat the bark around the circumference of the lower stem, which will kill the tree. Tree guards of some sort should be used to protect against this; I use ¼" hardware cloth to wrap the lower trunks in each fall, until the trees are of adequate size (4+" in diameter or so) that this is no longer a threat.

Tall weeds should be discouraged from growing around the base of young trees, as they inhibit air flow and promote insect and disease infestation. Mulch is helpful and effective in discouraging excessive weed growth. Another thing I have noticed in many orchards over time is a lack of care when mowing and/or trimming. Every wound in a tree's bark opens it to infection with bacteria and fungal spores, so mow with care.

While limited space precludes getting into specific insects and diseases, there is one that I feel obliged to mention: the apple borer, a flying insect that lays its eggs in apple trunks near ground level. The larvae proceed to bore deep into the wood, leaving large tunnels that seriously weaken (and can eventually kill) the tree. It is essential to monitor for these, and to cut them out and destroy them when they appear. This also wounds the tree, but far less so than leaving them to feed and reproduce.

Pruning:

Pruning is an art and a science. There are definitely WRONG ways to go about things, that can have devastating effects on your trees, so do your homework. On the other hand, don't be shy either, as they are your trees. Doing it, and observing the results from year to year, is the best way to learn about it. And as I was once reminded at a fruit growing workshop, the goal of raising fruit trees is…to grow fruit, not to sculp the trees into perfect marvels of symmetry. Trees want to grow how they want to grow---after you've learned the basics, let each tree tell you how it wants to be pruned (or not). (Two good resources to start: *How to Prune Trees*, USDA Forest Service, 2012; and *Pruning Apple Trees*, found at chemung.cce.cornell.edu/resources, scroll down to find PDF)

Rootstocks/cultivars:

Fruit trees can range from the size of a tomato plant to the height of a multi-story building. Tree size (and vigor) are mostly controlled by the choice of rootstock. Different rootstocks also have varying degrees of disease and pest resistance, as well as varying degrees of suitability for different soil types and climate extremes. This is a complex topic, but *must* be considered at the outset in order to achieve your desired results.

Dwarf rootstocks are generally more precocious (bear fruit earlier), but produce much smaller quantities of fruit, and generally will have a shorter lifespan. Full-size (or seedling) rootstocks are going to be giant trees, which may be just the thing for an isolated specimen in your yard, but they will come to bearing more slowly, and will grow to become near impossible to prune, tend, and harvest. They may live for a century or more, so are a good choice for "legacy" trees. In between are the semi-dwarfs, which to me are the best choice of rootstock for most of us. For apples, this means something like M-7, or Geneva 30, which for me grow to about 12' tall or so. I once mistakenly mixed in a couple of less-dwarfing M-111 rootstocks with a bunch of M-7 planted closely together, and years later it remains an ongoing problem, requiring more annual pruning than I would like to control the size of these trees compared to their neighbors. Ask your nurseryman for specifics and recommendations for your situation.

As for cultivars, there are endless choices today, and a quick internet search will give you an overwhelming array of options, all described in the most glowing terms. A good way to narrow this down is to focus on local and regional nurseries, as their stock will generally be best adapted to our region. Ask questions. Go to local orchards in the fall and taste as many varieties as you can. It is a bummer to wait years for a tree to begin to bear fruit, only to find that it has poor flavor, or is particularly susceptible to insects and/or disease.

Before I moved to my land, one of my absolute favorite fruits was the Seckel pear, so I grafted and planted three Seckel trees in my young orchard, only to discover that in my location they are riddled with pear scab each season to the extent that the entire crop was inedible. After a little more research, I decided to regraft parts of these trees with a genetic variant of Seckel known as the "Worden" Seckel. It produces pristine crops of fruit, with no scab damage, even side-by-side with the scab infested trees. It certainly would have been *very* helpful to know this upfront, so again, try and consult with some local folks who have experience, as they will have some time-tested ideas about what might work for you.

Things to keep in mind and consider when selecting varieties:

Pollination: most trees produce viable pollen, but some don't; usually two or more trees together (same species, different variety) will ensure adequate cross-pollination and fruit set;

Precocity: some varieties are known for vigor, and for bearing fruit early; on the other hand, the venerable Northern Spy apple is known to take upwards of a decade before starting to bear fruit. That's a long time to wait;

Disease resistance: this is a very important consideration, especially if you are trying to pursue a no-spray regimen like I do. Unfortunately, some great tasting fruit varieties are simply too disease susceptible to be viable without sprays. That being said, there are more and more new varieties being developed with resistance to disease at the forefront of the breeding programs; some of them (not all) also taste good;

Productivity: some varieties put on HUGE crops annually; others will take a year off (biennialism) after a good fruiting year. Another thing to keep in mind is that sometimes big producers need to be thinned a LOT with each crop to keep them from breaking branches, or from bearing uniformly tiny fruits;

Here's proof that you don't need chemicals to grow blemish-free fruit. A large Fameuse apple.

Seasonality: varieties vary in their bloom time, from early- to mid- to late spring. The later bloomers may miss the killing frost that decimates the early bloomers' buds and flowers. They also vary in the "days to ripening," giving us the option of ripe apples as early as July, to those that need to remain on the tree into November to ripen fully. The late ripeners are generally the best keepers, and keeping quality and duration is another important trait. I have successfully stored apples (Fuji, Gold Rush, York, Keepsake) all the way from November until the following May;

Flavor: this is the big one, as it's why we grow fruit. It is also very personal, as some like all-sweet apples, and others like more complex flavors. This is why getting out and tasting fruit is so important. It's also important to know that many varieties will only develop their full flavor potential after some time in storage. A unique consideration with pears is that many varieties will require harvest before they are fully ripe on the tree, followed by a period of refrigerated storage in order to ripen at all; without it they just rot from the inside out, which is very disheartening until you learn what each variety requires. Also keep in mind that different fruit varieties will have different culinary purposes: some are best as "dessert" fruits to eat out of hand, while others are best suited for baking, or drying, or making sauce, or whatever.

While all of this just barely scratches the surface of the topic, I hope it at least has stimulated some thinking if you have been considering adding a fruit crop as a sideline to your woodlot. Few things I have done in life have been as satisfying as planting and tending a fruit tree, and eventually tasting its exquisite fruit, mere seconds after harvest. It isn't necessarily always easy, but it is a most worthwhile endeavor.

Jeff Joseph is this magazine's managing editor; he has been trying to figure out how to grow fruit for 20 years now. It remains a work in progress.

Apple blossoms—an orchard in full bloom is a beautiful sight.

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