The New York Forest Owner

A Publication of The New York Forest Owners Association

Promoting woodland stewardship since 1963

May/June 2024

Climate Change and the Future of Maple Syrup Production in New York

Volume 62 Number 3

NYFOA
New York Forest Owners Association
www.nyfoa.org

In This Issue . . .

The New York
Forest Owner
A Publication of The New York Forest Owners Association
Volume 62, Number 3

Jeff Joseph, Managing Editor
Mary Beth Malmsheimer, Editor

The New York Forest Owner is a bi-monthly publication of The New York Forest Owners Association, PO Box 644, Naples, NY 14512. 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 July/August issue is June 1, 2024.***

Please address all membership fees and change of address requests to PO Box 644, Naples, NY 14512 or ckenney@nyfoa.org. (607) 365-2214. Cost of family membership/subscription is $55.

NYFOA
New York Forest Owners Association

www.nyfoa.org

Cover: Maple syrup producers across New York State are feeling the effects of our rapidly changing climate, and are searching for ways to adapt. See story on page 21. Photo by Paul Renaud.

From The President

It's great to be a member of NYFOA as we enter the spring season. There are several very interesting events already on the calendar coming your way. First and foremost, I encourage you to support activities organized by your home chapter, along with the regional meeting programs we began in 2023 and will continue this year. It is heartening to see our programs drawing on areas of pertinent expertise among our members, university and industry professionals, NYS and federal government program officers, and many others. These programs are out there for your benefit and represent the core educational mission of our association. Bring along a friend, neighbor, relative, or workmate to the next NYFOA event. I am confident that by exposing non-members to the many substantive benefits (and fun) of being a part of NYFOA, many will sign on.

What is NYFOA's state board working on these days? As an organization, NYFOA had a successful experience at the NYS Farm Show on February 22 – 24. Once again, Hugh Canham coordinated a first-rate series of seminar programs which were well attended. This year the NYFOA booth at the Farm Show was in one of the main exhibition areas and we had a steady stream of visitors, 27 of whom became new members on the spot. A sincere thank you to Hugh Canham, Craig Vollmer, Peter Smallidge, Mike Gorham, Bruce Cushing, and everyone who contributed to our Farm Show presence. NYFOA's membership numbers now stand at 1,400 – a sharp increase since coming out of the dark days of COVID.

NYFOA communications committee members Mike Jabot and Bob Coupal are leading an effort to improve sharing of information throughout NYFOA. Mike and Bob are highly capable steering committee members for their respective chapters and long-time contributors/editors of their chapter newsletters. They have several excellent ideas in the works. Stay tuned.

On a related note, I am well-aware that parts of NYFOA's website are not current and that our online profile could use a general facelift. Our communications committee members, Executive Director Craig Vollmer, and Administrative Officer Claire Kenney have been working on several fronts to address the shortcomings we recognize in our website. A little patience on this one and I think we will come out with a much improved web presence.

In the near term, we have the following events scheduled:

- On May 4th, the NYFOA state board will have an in-person meeting at the Heiberg Memorial Forest, located 25 miles south of Syracuse.
- On May 11, there will be a NYFOA regional members meeting

continued on page 11

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.

( ) I/We own _____ acres of woodland.
( ) I/We do not own woodland but support the Association's objectives.

Name: _____
Address: _____
City: _____
State/ Zip: _____
Telephone: _____
Email: _____
County of Residence: _____
County of Woodlot: _____
Referred by: _____

Regular Annual Dues:

( ) Student	$20
(Please provide copy of student ID)	
( ) Individual/Family	$55
( ) Life	$750

Multi-Year Dues:

( ) 2-yr	$100
( ) 3-yr	$150

Additional Contribution:

( ) Supporter	$1-$59
( ) Contributor	$60-$99
( ) Sponsor	$100-$249
( ) Benefactor	$250-$499
( ) Steward	$500 or more

( ) Subscription to Northern Woodlands $15 (4 issues)

NYFOA is recognized by the IRS as a 501(c)(3) tax-exempt organization and as such your contribution may be tax deductible to the extent allowed by law.

Form of Payment: ☐ Check ☐ Credit Card
Credit Card No. _____
Expiration Date _____ V-Code _____
Signature: _____

Make check payable to **NYFOA.** Send the completed form to:

NYFOA
PO Box 644, Naples, NY 14512
607-365-2214
www.nyfoa.org

End of an Era: Ask a Professional

By Jeff Joseph

Over sixty years ago, in July of 1963, NYFOA issued its first publication. Simply titled ***Forest Owner****, it was manually typed, was less than two full pages in length, and was mimeographed for distribution to members (the elders among us will remember the pre-photocopier days of the mimeograph). The Association itself was founded a few months earlier, in April, and the first issue served to inform members of the initial meetings, governance, and plans of the fledgling organization. Since that humble beginning,* ***Forest Owner*** *evolved into* ***New York Forest Owner****, before its current iteration as* ***The New York Forest Owner****. The newsletter made its transition to magazine form in 1975, and had many facelifts over the succeeding years before adopting its current 24-page, gloss, part-color format.*

The reason I know all this is that due to the efforts of the late Jim Minor, we all have at our disposal a complete online archive of nearly the full 60 years (thru 2020 at present) of NYFOA's statewide publication. For any of us interested in forest management and its history in New York, the archive is an invaluable trove of knowledge, and I would highly recommend that you spend some time there if you have yet to do so.

To access the archive, go to ***www.nyfoa.org****, click on* ***Resources*** *on the home page, then click on* ***Archives of the New York Forest Owner*** *to the left, where you can then view the individual issues by year of publication, or you can use the search bar for a more targeted exploration of past content.*

Having spent a fair amount of time there myself, one thing I have learned is that over the decades, while there have been countless members and forestry experts who have contributed articles, editorials, stories, letters, and photos, there have been a smaller number of key individuals who have made very substantial contributions to NYFOA's publications over the years. As for the reason I bring this up now, other than to plug the archive, is that after nearly 20 years as coordinator and lead author of the Ask a Professional column, Peter Smallidge will be stepping down from that role.

The first Ask a Professional ran in the May/June 2004 issue, at which time Pete fielded the questions and handed them over to colleagues to answer, but starting in the following year, he became the primary writer,

Pete addressing a good sized crowd at the Arnot Forest.

and to date has authored over 100 of the columns. As New York State Extension Forester, but also as a fellow woodland owner and NYFOA member, Pete has long exemplified the commitment to outreach and education that is at the heart of NYFOA's mission, and the long, unbroken string of detailed, informative columns he has authored for the magazine offer a prime example of this commitment. While we are very sorry to see him go, and hope to retain him as an occasional contributor in the future (right Pete?), for now we would just like to take a moment to both thank and honor him for all he has offered the NYFOA membership through his fielding of member questions over the years. Thank you, Pete.

As a token of our appreciation, and knowing that Pete is an avid woodworker, NYFOA recently presented him with an heirloom quality Lie-Nielsen block plane. Longtime NYFOA member and forestry colleague Brett Chedzoy was kind enough to do the honors of presenting the gift (see images on next page).

The following is a reprint of a few early Ask a Professional columns that I alluded to above, the very first two from 2004 that Pete facilitated, and the first that Pete authored himself back in 2005.

One of the great things about working with trees and forestry in general is that while the pace of change in the world at large is relentless, there is a timeless quality to woodlot management, or at least a much slower pace of change than in the culture at large, so that the information offered in these columns from 20 years ago remains as fully relevant and engaging today as it did when first published.

While we will not be able to fully fill Pete's shoes, heading into the future we will be drawing in some new contributors, both forestry professionals and laypeople, to continue to offer sound forestry advice, guidance, and perspectives. As always, feel free to let me know what you would like to see covered in these pages.

—Jeff Joseph, managing editor

continued on next page

Longtime NYFOA member and colleague Brett Chedzoy presenting Pete with the handplane chosen to show NYFOA's appreciation for Pete's contributions to this magazine over the past two decades.

Lie-Nielsen No.102 low-angle block plane; an American-made and heirloom quality tool.

May/June 2004 NY Forest Owner

QUESTION:

How can I find a consulting forester who will work on an hourly basis, rather than on commission?

ANSWER:

The Department of Environmental Conservation (DEC) has a publication, New York State Cooperating Forester Program. Foresters listed in this publication have entered an agreement with the DEC to abide by a code of ethics and follow other terms. This is one good source for forest owners to find a professional forester to work with.

Contacting a forester should be an effort worth investing time in. An

interview should work out terms of employment, a review of work history, checking references, and perhaps going to look at some of the other clients' jobs.

Personally, I have always felt that a forester should be paid for work performed, not on the basis of a commission on a product sold. Most foresters work by the hour or by the acre for services not related to timber sales, so why shift to commission for timber harvests? There is at least a perception of a potential conflict of interest if a timber sale is marked on a commission on the sale price of the timber to be sold. The work effort involved in marking timber has little relationship to quality or species of the wood to be sold.

In interviewing a forester, determine if he or she will work for an hourly fee. Check references to find out how other clients have fared. Again, in my opinion, there should be no vested interest in the product being sold. The timber should be marked, scaled, and sold through competitive bid, where the forest owner knows how many potential bidders will be contacted. The owner should also know if the long-term forest management goals are being applied. Diameter limit cuts, that is cutting all trees above a certain diameter, are seldom in the best interest of the forest owner. High grade cuts where all the good trees are sold and the poor trees remain for the future are an even worse approach to forest management.

It can take a century to grow a forest crop; therefore a forest owner should invest some time in making an informed decision about the best forester to represent that owner's interests.

Response prepared by Michael C. Greason.

QUESTION:

What is the best way to mark property boundaries? Should nails be driven all the way in? Is it better to blaze and paint or use plastic or metal signs? How often should my property be surveyed?

ANSWER:

The best way to mark a boundary line is—accurately! What is the best way? There is no best way. There are many good ways. Let's back up a bit. Why is it so important to identify our property? It is impossible to manage our forest if we don't know where it is. Appropriately marked lines are the best prevention against trespass and timber theft. Good lines also makes for good relations with our neighbors by reducing boundary disputes.

As a professional forester, I prefer a painted boundary line that is highly visible. Painted marks are difficult to vandalize and fairly long lasting. Painting with boundary marking paint doesn't injure the tree stem. I also believe boundary paint is the cheapest method.

If you chose to paint your lines, use a good oil-based paint similar to machinery enamel. Orange, blue or lime green work well. Red is not a preferred color. As it fades, it is difficult to see. Also, red is difficult to most people who are color blind. The placement of the paint mark is important. It should be approximately 4-6 feet above ground, i.e. eye level. If a tree is located exactly on line, two marks should be placed on opposite sides of the tree corresponding to the boundary line. If the tree is slightly off the line, place one paint mark facing the line. When corners are located, three (3) horizontal marks are placed on corner trees with the paint mark facing the corner.

Only a licensed land surveyor can legally blaze a property line. I do not like this method because it places a lasting injury on the trees. It is by far the most durable marking. Posted signs are a preferred method to designate boundaries by many landowners. They not only identify the boundaries, but also state the rules of occupation. These normally forbid trespass for certain or all purposes. I prefer plastic signs and aluminum nails. The plastic signs, I think, are more durable. The aluminum nails will cause less damage to machinery if the tree is ever sawn. Nails should not be driven enough to secure the sign — not all the way into the tree. I personally prefer the use of backing boards to the sign. I believe this in-creases the visibility of the sign.

One of the most novel approaches I've seen to boundary identification, was on property in Penn Yan, NY. The owner placed steel rods at about 100 foot intervals and placed inverted bleach jugs over the stake. He painted the jugs a fluorescent orange color. This was done in conjunction with posted signs.

Place boundary marks close enough together so you can see from one to the next. The New York Environmental Conservation Law only requires posted signs at 10 chain intervals, i.e. 660 feet. I do not think this adequate for good visibility.

A property survey is needed only once to certify the legal boundaries. If the evidence is preserved and maintained, it should never be needed again. If the need for a survey is required, I suggest you solicit quotes from a number of area surveyors for their services. Keep in mind that a survey does not normally include marking or identifying the property lines. It only involves locating and identifying the corners. Surveyors will flag the lines for a fee. I suggest to you it is well worth the money. What good are corners hundreds of feet apart when it comes to finding the exact line?

Regardless of what method or combination you use, you must maintain the signage on an annual basis. Identifying your boundaries should be the first step in a management plan of your forest.

Response prepared by Billy Morris.
Coordinated by Peter J. Smallidge.

continued on next page

July/August 2005 NY Forest Owner

QUESTION:

I bought an old farm that has about twenty acres of woods and evidence of use as a sugarbush. There are some monstrous old sugar maples and some maple regeneration resulting in a fairly good abundance of younger 10" to 12" diameter trees. I would like to manage the woodlot to restore production to the sugarbush, a project I will use in retirement. I think some trees need to be culled and thinned. How should I proceed?

ANSWER:

There are many old farm woodlots with a history of maple syrup production and countless more acres where sugar maple dominates and could be put into annual syrup production. Your question is applicable to both cases. There are some well established principles, but the specific answers will depend on the details of your property. The specifics that will vary from your property to others include the length of time until you tap, your production goals at the outset, the current density of trees, health and vigor of the old trees, and the number of smaller trees.

Before going into the technical information, let me share some resources. First, the Cornell Maple Program includes a statewide network of Cornell University Cooperative Extension Educators who can help in many aspects of sugarbush management and know of specific educational resources. You can find a maple team member on the web at http://maple.dnr.cornell.edu Also, several DEC foresters and private sector foresters have experience managing sugarbushes. Find one who has this experience and invite them to your property.

What's the target?

All management activities have an objective or target. With sugarbush management a goal is to produce abundant sap with high sugar content. Trees that have large diameter crowns and a high percentage of the length of the tree's stem in live crown have better sap quantity and quality. These crown dimensions influence the annual production of new wood, the sap wood, and that influences sap quantity and quality. The quantity and quality of sap influences the efficiency and productivity of the operation. Weather will strongly influence what happens in any given year because of the need for freezing nights and sunny days to help the sap run.

Under ideal growing conditions, a sugar maple crown might be 50 - 60 feet in diameter and 80% of the stem height as live crown. In a forest, crown diameter and live crown ratio are half as much. Management in a forested sugarbush strives to increase crown dimensions while maintaining large healthy trees. Typically, competition among trees for sunlight limits crown growth. As trees get older and larger, our ability to influence crown dimensions and maybe to influence sap characteristics decline. We have our greatest influence with management on smaller trees. Thus, management to encourage and maintain full crown dimension should begin when trees are 6 to 10" in diameter. Starting management with smaller diameter trees will allow even greater control over crown dimensions. Allowing a sugarbush to stagnate and close into a dense canopy can have negative long-term impacts on future syrup production.

Knowing Your Needs

The first step, as with all woodlot management tasks, is to know exactly what you want and when you want it. Then, you can determine if your resource can suit your objectives. If not, you can refine your objectives before beginning any activity. A forester can help you evaluate the compatibility of your needs and objectives with your resources.

Because the sugarbush in question is intended for use in retirement, it is important to know the timeline to retirement. While you may in fact need to thin the sugarbush, you want to make sure you retain enough trees to achieve your production goals at the time you retire. A five year horizon will mean retaining more of the old, presumably less thrifty trees. A twenty year horizon will give you a chance to favor the growth of the smaller and younger trees.

With 20 years of ample sunlight on good soils, the 10 to 12" diameter trees could be several inches larger and very productive. Thus, with more time you might thin more aggressively in the older trees, but never too aggressively. You need to retain enough stems to produce the desired sap quantity for boiling.

Knowing Your Resource

The first step is to determine the current density of stems in the sugarbush because density will influence the sunlight available for growth. A dense sugarbush will have limited understory development, no brambles, and mortality of lower branches of the large trees. You can also use an increment borer to determine the radial growth rate (radial growth is one-half of diameter growth). You should try to minimally attain radial growth of at least 1/16" per year for an 18" diameter tree and 1/8" per year for a 10" diameter tree. Thus, your 18" tree is growing almost 2" in diameter per decade and your 10" tree is growing almost 4 inches per decade. These growth rates will allow you to follow maple syrup tapping guidelines and help ensure a vigorous tree. As you assess the density of stems, pay close attention to the presence of diseased or stressed trees, especially those which might fall or otherwise not be productive for sugar. Tree health matches tree density as important criteria to evaluate sugarbushes when planning for future production.

If the canopy is fully closed, then some trees are not getting adequate light and the growth of most trees is compromised. Competition for light will limit diameter growth and thus decrease sugar concentration which in

turn reduces syrup production. You will want to thin down to a density of trees that retains good production per acre (number of taps) but that provides sufficient light to give ample growth of trees. The specific number of trees to retain depends on the size of the trees. Details of thinning regimes are beyond what can be discussed here. In general though, you would seldom want to remove more than ¼ to 1/3 of the basal area during any single harvest. In the first thinning of an unmanaged stand the "losers" are often easy to select. In managed stands, it becomes increasingly difficult to select trees for cutting if you have left the best trees each time.

Making the Cut

Once you decide that thinning is necessary, the process to select trees to remove from the canopy could follow one of two paths. Use area-wide thinning if your woodlot has a relatively high percentage of good growing stock. Use crop tree management if the growing stock in your woodlot is relatively sparse and widely scattered. With area-wide thinning selection criteria for a sugarbush should focus on removing: (1) trees that are unhealthy, diseased or otherwise unlikely to survive more than ten years, (2) undesirable species and species of poor quality, (3) sugar maple with evidence of significant disease or insect damage, (4) sugar maple with mechanical defects such as broken crowns, and (5) crowded sugar maple with retention of those trees having the highest relative sugar content. With crop tree management, focus on reducing competition to sugar maples with stems that are free from insect and disease and that have vigorous crowns. You will want to remove competitors from at least two side of the crop tree to give the crown full freedom to grow. The goal is to provide at least 4 to 6 feet of space between adjacent crowns. Subsequent thinning should free additional sides of these crop trees. If you are trying to select between two other-wise equal trees, sugar content of the sap is a good tie breaker.

The quantity of syrup you wish to produce when you start will influence how aggressively you should thin. If you don't have specific production goals and there is reasonable stocking of the smaller stems, a more aggressive thinning of the larger trees would help ensure you maintain vigorous growth of the smaller stems.

With either approach to thinning, you might want to retain some high value trees of other species if they are located on good soils and not competing with sugar maple that have good form and quality. You can culture these to become sawlogs and supplement future income. Your willingness to retain other species depends on the specifics of your objectives.

Do not necessarily try to make the sugarbush a pure stand of sugar maple. Most sugarbushes aren't big enough to impact the landscape or other ecosystem process if they are a monoculture. However, there is enough soil variation in most sugarbushes to allow some diversification that favors other species on thin dry or poorly drained areas. Sugar maple performs best on well drained productive soils. Other species will do better on wetter or dryer soils. The variety of trees will benefit a variety of wildlife, simplify the task of keeping your maples healthy, and improve the aesthetic of your sugarbush.

Final Thoughts

Use great caution in cutting the larger trees. It isn't the tree stem you are felling it is a large crown you are trying to squeeze down among your residual stems. Cut smaller diameter undesirable stems first to help open gaps to allow the larger crowns room to develop. Hone your skills in directional felling with Level I and II in Game of Logging.

Response prepared by Dr. Peter Smallidge, NYS Extension Forester with Cornell University, Department of Natural Resources.

Wild Things in Your Woodlands

By Jessica Park

Firefly (*Lampyridae*)

Lampyridae is a family of soft-bodied beetles known for their light-emitting abilities, hence whimsical common names such as "firefly," "lightning bug," or "glowworm." All known members of the family exhibit bioluminescence as larvae to warn predators of their toxicity, while a few genera retain the ability as adults, primarily to attract mates.

Different colors and flash patterns are observed in different species of firefly. Flashes generated in the light producing organs can appear yellow, green, pink, or a cold blue-white. In addition to color, fireflies can identify members of their own species based on the duration, frequency, timing in flight, and number of flashes. Some species even perform dramatic synchronized shows in large groups.

The firefly family (Lampyridae) includes more than 2,000 species, together having a nearly world-wide range. They are found in tropical and temperate biomes on every continent except Antarctica. While new species are still being described, 165 are native to the United States and Canada, and roughly 30 of these can be found in New York.

Due to their diversity, fireflies also take on various niches in their habitats. Some feed mainly on pollen and nectar from plants, while others are completely predatory. Some exhibit interesting specialization, such as the females of the Photuris genus which mimic the flash patterns of Photinus females to lure male Photinus fireflies as prey. Many adult fireflies, however, do not eat at all and lack mouth parts due to the short amount of time they spend as adults. The larvae, on the other hand, are usually voracious predators, feeding on other invertebrates like snails, slugs, and other beetle larvae. In some cases, though, they have been observed feeding on berries or other plant matter. Prospective predators of fireflies are usually deterred by the lucibufagin (defensive steroid) toxins they produce, but spiders, assassin bugs, and a select few other invertebrates are exceptions.

Fireflies exhibit a metamorphic life history, transforming from larvae into winged adults, usually over the course of a year. Generally, adult lightning bugs will exhibit their glowing courtship displays in the late spring and summer. A female firefly will then lay eggs on or just under the ground a few days after mating. About four weeks later, the eggs hatch. The larvae will feed and grow throughout the summer before going into hibernation. Many do so underground or within tree bark. The larvae transform into pupae and develop this way for around two weeks before emerging in the springtime as adult beetles. While the adult stage is the most familiar to our imaginations, fireflies usually only spend a fraction—roughly two to four weeks—of their lives in this charismatic form. Of course, some species of Lampyridae beetles have quite different life histories: some live as larvae for years before metamorphosing further, some are diurnal, some have an aquatic

continued on next page

larval stage, some do not produce light as adults at all.

Despite their pleasant reputation among humans, fireflies are threatened by a variety of anthropogenic disruptions. Light pollution, pesticides, invasive species, and habitat loss are among the greatest threats to firefly conservation. Perhaps unsurprising given their famous courtship behaviors, artificial lights that interfere with firefly flash patterns can inhibit effective communication and mate selection. Pesticides, too, have been implicated indirectly in firefly declines as they can decrease typical prey populations like slugs and snails, but recent studies have also demonstrated direct damage caused by commonly used insecticides. Firefly populations are also threatened by invasive species; not only those that kill them directly like fire ants and fungal diseases, but also those that alter their habitats like invasive plants. Being that most fireflies rely on specific conditions (moisture, leaf litter, a diversity of native vegetation, loose earth, relative darkness at night, etc.), degradation and loss of proper habitat in general is a significant issue for firefly populations.

However, there are many simple ways to support the conservation of these remarkable animals at home. In fact, one of the best things a landowner can do to help local fireflies is nothing—less lawn mowing, less leaf-raking, less pesticide use. The less a firefly habitat is disturbed the better. Female fireflies and larvae rely on ground cover, leaf litter, and loose earth to breed and develop. By leaving vegetation to grow, die, and drop material, firefly habitat is enriched. Furthermore, both fireflies and many of their prey items require moisture in their habitat to thrive. Thus, the addition of a small water source can also be to the benefit of our local lightning bugs. And of course, reducing outdoor lighting, especially at night, can help with firefly breeding during the late spring. Hopefully with all this done, though, the night will be lit with glowing fireflies instead!

Jessica Park is a Program Assistant for the New York State Master Naturalist Program, directed by Kristi Sullivan at Cornell University's Department of Natural Resources and the Environment. More information on managing habitat for wildlife, and the NY Master Naturalist Volunteer Program, can be found at https://blogs.cornell.edu/nymasternaturalist/
Photo credit: Joanne Redwood

Would you like to see an article about a particular topic we haven't covered?

Please send your suggestions to:
Mary Beth Malmsheimer, editor at
mmalmshe@syr.edu
or
Jeff Joseph, managing editor at
jeffjosephwoodworker@gmail.com

From the President (continued)

in Tupper Lake, drawing attendees from the Northern Adirondack and Southern Adirondack chapters.

• From May 18 - 20, we will co-sponsor a series of events with Northern Woodlands in the Watkins Glen and Arnot Forest region.

• On June 15, there will be a regional members meeting at Hudson, NY designed to draw attendees from NYFOA's Lower Hudson and Capital District chapters.

We will send the respective agendas for each event to all members and promote them in the *NY Forest Owner*.

NYFOA Logo Items

Back by popular demand, Claire Kenney has worked out a relationship with a supplier to have NYFOA logo items available online. This includes products such as t-shirts, sweatshirts, baseball caps, coffee mugs, and other bling. For more information on the full range of products, prices, and how to order see page 9.

On a relevant person note, my wife Jeannine and I received a forest regeneration cost share grant through the Upper Susquehanna Coalition (USC) to plant 1,200 seedlings on our property. I am a deliberate kind of guy and it would probably take the rest of my life to plant that many trees. The agreement we have with USC includes supplying a mix of northeastern hardwood seedlings, 5'tree tubes, oak stakes, and a crew to do this planting. I really like the last part. We were pleasantly surprised to learn that the planting contractor does this type of work all the time and expects to complete the job in less than two days. Wow. I will provide a follow-up on the results of the planting which we expect to complete by mid-June. USC operates in 18 counties in NYS that are part of the Upper Susquehanna River Basin. For more information about USC's programs and cost share opportunities visit *https://www.uppersusquehanna.org/usc/*

In the meantime, enjoy the spring, your woods, and your families.

–Stacey Kazacos
NYFOA President

Are We on the Same Page?
Managing Expectations During and After a Timber Harvest

By Jim Frohn

A NYFOA member who works in the timber industry forwarded this article to me to consider for publication, suggesting that it might prove helpful for our audience. Having read it, I agreed with him, as it offers a balanced and common-sense perspective for those considering engaging in a timber harvest on their property.

—Jeff Joseph

People in the business of serving clients know that a project went well when the customer is satisfied. A happy customer leads to more business, whether it be repeat business with the client or clients gained through word of mouth.

The key to a happy client is meeting or exceeding their expectations. The key to a good experience for all people involved is that everyone's expectations have been met. And the key to that is for all parties to understand each other's expectations.

A timber harvest involves much more than simply cutting trees and sending them to a mill. There are several parties involved, all with their own expectations. The direct parties are the landowner, logger, and forester. Then there are the wood buyers and truckers. In addition to these, there are other parties that can have an impact on the outcome of a harvest, and they should be considered as well.

When I worked as a consulting forester, I half-jokingly told people that my job title should be "expectations manager."

The landowner, forester, and logger each have their own expectations. In the case of the forester and logger, the expectations come from experience and are often assumed to be understood. For the landowner, most of whom might only sell timber once or twice in their lifetime, expectations are not from experience. The unequal knowledge among the three parties can lead to problems associated with unmet expectations.

The forester expects the logger to cut the designated trees, minimize damage to the residual stand or existing regeneration, prevent soil erosion, protect water quality, merchandise trees to their best value, close out the job, follow best management practices, and adhere to the contract. The forester also expects the logger to keep track of and promptly pay for the harvested wood.

The logger expects the forester to mark the harvest so it is clear what to cut and what to leave, which areas to avoid, where the stream crossings are, where the landings and roads should be, and to make the job as efficient as possible. The logger also expects the forester to take care of all necessary permits and paperwork, per their agreement.

If a logger and forester have worked together on past projects, the expectations between the two will be better understood over time and they may feel that there is less need to discuss them.

These expectations can't be assumed when working with the landowner. This is often what leads to misunderstandings and less-than-desired outcomes. The landowner may know little or nothing about timber harvesting and forestry and may be entering a transaction with lots of assumptions. They might assume that logging is more like tree work and landscaping, where all the parts of the tree are cleaned up and removed or chipped and spread out. Landowners often have aesthetic goals for their land, so this assumption is understandable. However, as the forester and logger know, this level of cleanup is not usually part of a standard logging job if the landowner is expecting competitive stumpage rates. It should be made clear to the landowner what a standard timber sale involves. These include minimal damage to the residual stand, protection of soil and water resources using BMPs, and some level of cleanup of skid trails and landings, along with tracking and payment of all wood that leaves the property. It's critically important to have this discussion ahead of time between all three parties.

Detailed cleanup can be accomplished, but the landowner needs to understand that a level above and beyond a normal harvest will be at an additional cost. This cost can be handled in a variety of ways, such as reduced stumpage or a billed project, but the expectations need to be understood upfront.

Trails are another common point of misunderstanding that should be dis-

Photo by Jeff Joseph

cussed between all parties. Logging trails can be repurposed as recreational trails in the years between harvests. This does not necessarily mean, however, that the trail will be cleaned of all logging debris, cleared of stumps, and made smooth. This might be the landowner's unspoken expectation, so it's important to be sure of what they want and to address it in the contract. For example, a landowner has certain trails that they walk frequently and want to be free of debris after the harvest. The forester and logger need to know where these trails are, they should be clearly designated, and the expected level of cleanup should be clearly spelled out in the contract. Finished trails that are stumped and smoothed out are typically a cost, so that needs to be clarified as well. It is important to clarify who will do this work, since many loggers are geared up to harvest timber, not build recreational trails.

Communication is Critical

It is the forester and logger's responsibility to understand the landowner's expectations and to help them develop realistic expectations (if they happen to be unrealistic). As professionals who lay out, mark, and administer timber sales regularly, it can be difficult for a forester to put themselves in the landowner's shoes and look at it from their perspective. The landowner may have no knowledge at all of logging.

I heard a story of a landowner who was very upset during a timber harvest because the stumps weren't removed as part of the job. Their expectation was that the stump would be removed when a tree was cut. The forester assumed, understandably so, that removing the stump is not part of harvesting a tree. But the landowner had the unspoken expectation that the stumps would be removed. It's an extreme example, but it shows that it's risky to make any assumptions at all about the landowner's knowledge of logging.

Contracts Are Needed

In the ideal transaction, all parties' expectations are spelled out in a written contract. While it is important to discuss expectations by asking questions and describing in detail how a timber harvest is done, the timber sale contract is where all parties' expectations are written down. A contract is a legal document, so the expectations recorded here must be met. A well-written contract helps to protect all parties involved in the transaction by clearly articulating everyone's expectations.

According to the University of New Hampshire Cooperative Extension:

Well-written timber sale contracts clearly define conditions of the timber sale, the responsibilities for performance, and expenses. Any designation or condition in a timber sale agreement that doesn't express whose responsibility and at whose expense the burden lies can lead to unnecessary disputes. In other words, put in writing who is responsible for what and who pays for it!

Mill and Log Buyer Expectations

Once the trees are harvested, another set of expectations comes into play. The buyers of the wood have their own set of expectations which are usually outlined in the spec/price sheet. The sheet shouldn't be relied on for the main source of information, however. An initial conversation with the log/wood buyer should clear up any questions and let the logger know if there are specific products the mill is looking for. For example, there might be multiple species listed on the spec sheet, but the buyer prefers only one or two species. The preference is often reflected in the price, but the supplier should talk to the buyer rather than make an assumption. Regular communication with the buyer will keep the seller informed of any changes in the mill's needs. These can be related to species, volumes, or other factors. The key is to know what the mill wants. This will reduce any surprises.

The logger has expectations of the buyer as well. A fair scale and grade, reasonable time for payment, and minimal unloading time at the mill are all common expectations. The buyer needs to communicate regularly with the seller if there are changes so the logger can adjust their schedule or markets when needed.

Trucker Expectations

The trucker has expectations too. They need to know where the landing is and the most efficient way to get there. They need to know if there any road conditions, such as a bridge under repair, weight limits, or hard-to-navigate turns that require them to find an alternative route. It should also be clear which products go to which mill or yard and how to fill out any trip tickets or load reports.

Other Parties

Parties that are not direct participants in a timber sale, sometimes referred to as stakeholders, should be considered.

Adjoining landowners are an important other party. While often overlooked, an unaware neighboring landowner can cause problems. Though some might consider informing adjoiners of an upcoming harvest to be inviting potential problems, in my experience there are worse consequences to not informing adjoining owners. In cases where I have informed neighbors that there will be a harvest, I have rarely had problems or even questions, while some harvests didn't go smoothly because I didn't let neighbors know what was going to happen.

Letting adjoining neighbors know that logging and trucking activity will be taking place can take extra time and effort but can help to avoid bigger problems in the future and might even result in gaining additional clients. In some states, informing abutters prior to harvest is required by law.

The local road agent is another party who has expectations. They expect the road to not be damaged from trucking logs, any required bonds to be posted, and weight limits to be respected. Communication with the road agent, especially during periods of wet weather or freeze/thaw conditions, can pay dividends in terms of being allowed to truck, when conditions allow, rather than being shut down outright.

Benefits of Meeting Expectations

It takes time to develop an understanding of people's expectations and get them written into a well-worded contract, but the effort is worth it. Understanding and meeting, or better yet, exceeding the expectations of all parties involved in a harvest results in a satisfied client, a profitable job, and positive word-of-mouth advertising for future work.

Jim Frohn is an Extension Field Specialist in Forestry at the University of New Hampshire. This article was originally published in the August 2023 issue of The Northern Logger and Timber Processor Magazine and is reprinted with permission.

2023 NYFOA Donors

The New York Forest Owners Association thanks the people and organizations that supported our programs and publications in 2023. Your help is essential to our work.

Steward
($500 or more)
Mike Blasko / South Central Forest Products LLC
David and Nancy Colligan
Costanza Family Foundation
Stacey and Jeannine Kazacos
Art and Pat Wagner

Benefactor
($250-$499)
Philip Arnold
Bob Bleier, CPFA
Peter and Nancy Ellis
John Herbrand
Thomas and Yvonne Hobbs
Ken Hopler
Nick and Elsa Steo

Sponsor
($100-$249)
Alabama Forest Owners' Association
Bob and Carolyn Akland
Christine Baltz
Michell Banas
Kathryn Beckwith
Scott Brady
Melvin and Loretta Mae Brand
Christine Braun
Ken Brown
Gregory Bucher
James and Tamara Casey
Stuart and Richelle Easter
Neil and June Eberley
Ted and Deborah First
Troy Firth
Dick and Shari Gibbs
John and Connie Gilbert
Jerry and Erica Gutberlet
John Hastings
William Havlin
Kenneth Henderson
Frederick Hildenbrandt
Carol Holden and Family
Idleweiss Farms
John Jackowski
Brice June
Alfred and Debora Klein
Aaron Gowan and Marcia Kropp
Paul and Patricia Lambiase
Lawrence Lepak
Greg Lessord
Luke Lewis
Frank Marcigliano
Tom Moeller
Peter Paine Jr.
Shamrock Forestry Ltd.
(Patrick Regan)
Theodore Siwy
Jim Sollecito
Sheila Ascher and Dennis Straus
John Updyke Sr.
Sharon Van Niel
Anton Wagner
Phillip and Valerie Walton
Joseph Weiss
Welsbach Nature Management LLC
Phillip Zorda

Contributor
(up to $99)
Carl Albers
Daniel Anderson
Dale Barber
Dale Bigham
Joseph and Mary Ann Bursik
Steven Buttiker
Jeanne Caruso-Ferrentino and
Carl Ferrentino
Lawrence Cheney
Bryan Cleaveland
Daniel Cleveland
Pat and Joan Costello
Carl Davis
Brian Deverell
Ed Downey
Willie Eaton
Mike and Joyce Ermer
Wayne and Brenda Forrest
Laura Ferris and Garrett Hamlin
Janice Glover
Thomas and Kathleen Graber
Betty Gregory
Alice and William Hallenbeck
William Heilmann
John and Linda Holmes
Gilbert and Jeannette Holtz
Christopher Howard
Katherine Humphrey
Robert Irwin
Nick Jensen
Brad and Linda Jones
James and Joan Keebler
Kerry and Joe Koen
Louis Kosko
Richard Kraft
Joe Labarca
Jim Lawler
Carolyn Lerum
Paul Litynski
James Lockwood
Lester Lovelass
Norman Maender
William Maracle
Brian and Nancy McCarthy
Raymond Meinzer
Gerald and Jill Palmer
Dennis Perham
Edward Piestrak
Kenneth Pollard
Peter and Janet Radka
James Rattoballi
Richard Regan
Karl Ruger
Jack Russen
Wayne and Colleen Ryan
Robert Sandberg
Cheryl Sherman
Gerald Smith
Jeffrey Spicer
Michael Stark
Nancy and Kevin Stone
John and Corene Trickey
Peter Van Vlack
David Williams

"It's so empowering to meet others at this conference who also believe in preserving and even enhancing our local natural resources."

—2023 CNY Regional Conference Attendee

Mark your calendars!

The NYFOA Regional Conferences Return for 2024!

NYFOA is excited to bring to you again four regional conferences to be held across the state this year that will be accessible to all members (and non-members – tell a friend). If you prefer to stay close to home, one will be held nearby, or you may live where you can choose from more than one; but if you're looking for a reason to get away or can't make the one nearest you, you can choose from any of the other conferences to attend instead.

What:

- Forestry 101 - Frequently Asked Questions
- Invasive Species Control
- Real Property Tax Law
- Ruffed Grouse Habitat Management/ NRCS Cost Share Programs
- Forest Health Tool and Resiliency Score Card Field Demonstration

Where & When

Adirondack Region – May 11th
Tupper Lake High School - Tupper Lake, NY

Hudson Valley Region – June 15th
Columbia-Greene Community College - Hudson, NY

Central New York Region – September 7th
LaFayette High School – LaFayette, NY

Western New York Region – October 19th
Pioneer High School – Yorkshire, NY

Watch for future notifications and registration information, or monitor the NYFOA website: ***www.nyfoa.org/events***
We hope to see you there.

Would you like to receive an electronic version of future editions of *The New York Forest Owner*? If so, please send Claire an email (info@nyfoa.org).

You will receive an email every two months that includes a PDF file of the publication. While being convenient for you – read *The Forest Owner* anytime, any place – this will also help to save the Association money as the cost of printing and postage continues to rise with each edition.

Woodland Health

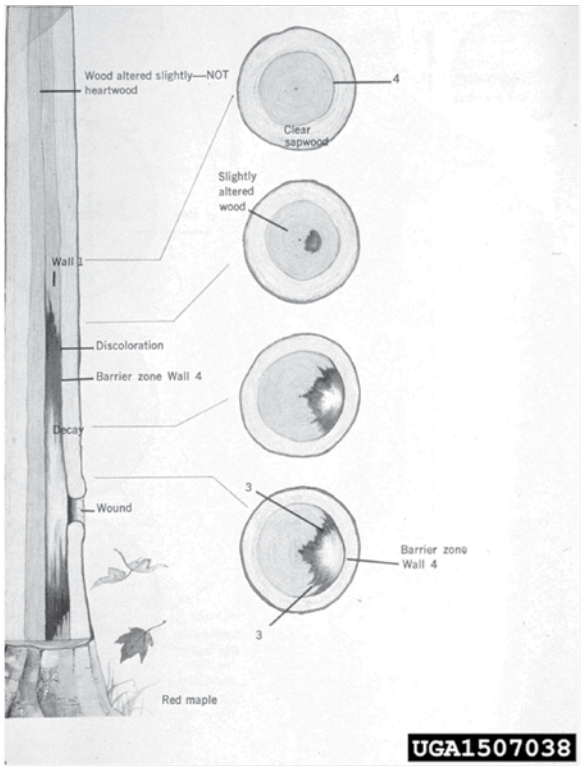
A column focusing on topics that might limit the health, vigor and productivity of our private or public woodlands

Coordinated by Mark Whitmore

The Man Who Would Have us Touch Trees—Thank You Dr. Alex L. Shigo

By Mark Whitmore

My introduction to the work of Dr. Alex Shigo came as I started grad school in the early 1980's. I was studying at the University of Washington and Shigo's recent work on tree physiology and pathology was ringing true to me as I studied forest health. The plot unexpectedly thickened when one of my professors handed me the business card of a local lawyer who wanted to talk with an expert on tree growth and pruning. In need of extra cash, as are all grad students, I jumped at the opportunity. It seemed like a simple case of improper tree pruning resulting in a tragic accident. After writing my report, I forgot all about the case as I delved into my research until one of my professors mentioned that the utility company, one of the defendants, had hired himself and two other professors. I was quite nervous, to say the least. The deposition was like swimming in a goldfish bowl with piranhas circling. Turns out that I had correctly identified the pruning history of the trees in question and during the trial the defense attorney thought he had one over on me, but he was unable to correctly convert cm to inches, much to the amusement of the judge. To top it off, they decided to question my expertise by throwing a few hardball questions my way. One of them was if it was proper to treat a pruning



CODIT walls around wound decay. USDA Forest Service, Region 8. Bugwood.org.

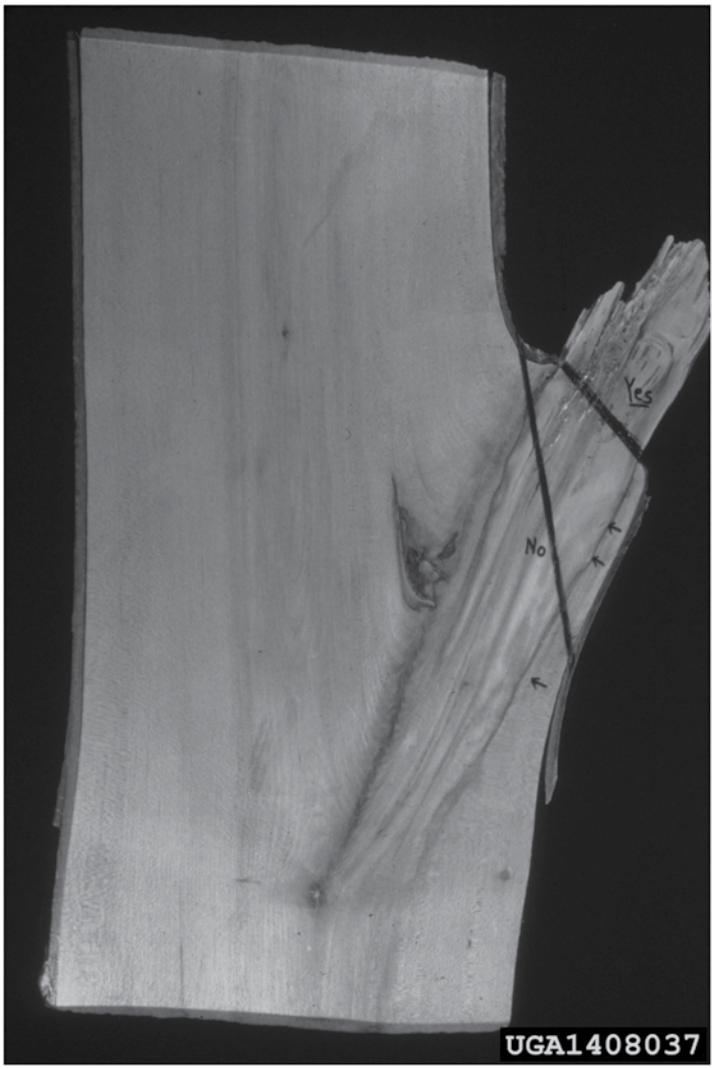
CODIT walls around wound decay. USDA Forest Service, Region 8. Bugwood.org.

wound with a sealant. The answer was absolutely not, I responded, according to the work of Dr. Shigo. There were no more questions, and, in the end, the defendants were found liable for damages. Thank you Dr. Shigo!

Dr. Shigo's innovative work was a product of the times and the tools that become available, as is the case with most scientific discovery. Born in Duquesne, PA in 1930, he served in the Korean War, then studied plant pathology at West Virginia University, receiving his MS in 1958 and his PhD. in 1960. Shigo was then employed by the USFS as a Forest Pathologist, retiring in 1985. He was passionate about trees and his retirement was an active one. He organized workshops and made presentations around the world. Together with his wife, Marilyn, they formed a business called "Shigo and Trees, Associates" and published books and other educational materials. Dr. Shigo passed away in 2006, having educated a generation of arborists, tree professionals, and scientists as well as the lay public with his 200 insightful articles and books.

The innovative tool Dr. Shigo so ably used to make his discoveries in tree anatomy and disease pathology was none other than the "humble" chainsaw, of course with the odd microscope added in for good measure. Did you know that the first chainsaw was invented in 1782 by Scottish surgeons for cutting bones? For less delicate forestry purposes, chainsaws were cumbersome devils that had to be operated by at least two people until the use of newly developed aluminum alloys after WWII. By the 1950's the one-person chainsaw was a reality, and Shigo put them to good use.

Dr. Shigo dissected over 15,000 trees with his trusty saw. What he found basically changed the way we think about the physiology of tree wound responses and the response of disease-causing fungi. The thing that continues to strike me are Shigo's detailed illustrations of the cellular structure of tree wood and bark. These, in combination with his descriptions of how photosynthates, or plant food, are moved around in these tissues to allow the tree to grow, strengthen, and respond to wounding is a profound synthesis of tree anatomy and physiology. It helped me to understand the concept of how tree vitality can influence a tree's response to insects and disease through an economy of available photosynthates and their capacity to move them around to where they are needed, driving the outcome of insect/disease-tree interactions.



Correct branch pruning at the edge of the branch collar. USDA Forest Service, Northeastern
Bugwood.org.

Correct branch pruning at the edge of the branch collar. USDA Forest Service, Northeastern Area. Bugwood.org.

When dissecting trees Shigo began to see patterns in the discoloration caused by disease introduced by wounds. He found that the discoloration moved up and down in the wood column but did not spread outwards into the new wood laid down after the wound was created.

continued on next page

The discolored tissue was in essence "compartmentalized" by the new wood. This led to his development of the concept he called "Compartmentalization of Disease in Trees" or CODIT. What happens in this model is that when a wound is created the tree will mobilize chemicals through its vascular system, which Shigo so beautifully described, that create "walls" to limit the spread of disease. He described four walls: wall one limits the vertical spread, wall two limits inward spread, wall three limits lateral spread, and wall four limits the spread outward into the new wood formed after the wound was created. From here it follows that the healthier the tree the stronger the wall and the more rapidly the wall is formed. In addition, the larger the wound, the more difficult to wall it off, or compartmentalize it.

Dr. Shigo had great respect for those who work with trees, or arborists. He regularly conducted workshops to help them understand the significance of his work to their everyday activities, and he wrote an excellent book to help guide them, which is listed below. This book is thorough and concise, and importantly dispels the utility of three treatments that have been handed down through the ages: pruning branches flush to the stem, painting wounds with a sealant, and filling cavities with cement. Pruning branches flush to the stem removes the branch collar, which Shigo demonstrates is rich in compounds to inhibit disease. This makes sense because trees are built to naturally shed branches. Shigo emphasizes that there is no data to support the idea that sealing, or dressing a pruning wound inhibits rot. He says that untreated pruning wounds on healthy trees do not rot whereas those on weakened trees may because they are unable to mobilize the chemistry to compartmentalize the wound. In addition, he has found wound dressings to harbor moisture that can enhance disease growth. Filling cavities is much the same as sealing wounds, the cement filling traps moisture next to the wood giving disease organisms a favorable place to grow, and indeed, the practice of filling cavities often involved scraping away the discolored tissues the tree had used to compartmentalize the wound.

I will be forever grateful for the work of Dr. Shigo, who was an enthusiastic proponent for trees and the people who work with them. The dedication to his book on arboriculture is "to all people who touch trees."

A few of Dr. Shigo's books:

A New Tree Biology. Alex L. Shigo. 1986. Shigo and Trees, Associates. Durham, NH. 595 pages.

Modern Arboriculture: A Systems Approach to the Care of Trees and their Associates. Alex L. Shigo. 1991. Shigo and Trees, Associates. Durham, NH. 424 pages.

A tree hurts, too. By Alex L. Shigo with illustrations by David M. Carroll. 1974. NE Forest Experiment Station and Charles Schribner's sons, New York. 28 pages. This book has some of the best illustrations of tree anatomy I've ever seen.

Tree Anatomy. By Alex L. Shigo. 1994. Shigo and Trees, Associates. Durham, NH. 104 pages. Beautifully illustrated with photography.

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

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
Thomas Fellows	AFC
John Colquhoun	CDC
Martin Lemos	CDC
Jim McSweeney	CDC
Tyler & Victoria Taylor	CDC
Lauren Anderson and Tom Gold	CNY
Doug Hudson	CNY
Marcia and Dale Jones	CNY
James and Teressa Klink	CNY
Mike Lapoint	CNY
Norbert Maute	CNY
Tim Moshier	CNY
Tim Palmer	CNY
Linda Schwab	CNY
Chris Marnell	NAC
Erik Whittaker	NAC
Vanessa Scinta	NFC
Winona Hathaway and Scott Eastman	SAC
David Bojanowski	SFL
Ben Reiling	SOT
Vonda Sheldon	SOT
Pat and John Streppone	SOT
Stephen Brind'Amour	WFL
James Howard	WFL
Bob Paine	WFL
Dale Seeley	WFL
Pat Steiner	WFL
Gerard Watkins	WFL

Enhancing the Values of Family Forests in the Northeast

A Joint Gathering of the New York Forest Owners Association & Northern Woodlands

May 17–19, 2024
Southern Finger Lakes Region of New York

Presentations will take place at the following locations:

- Cornell University Arnot Teaching and Research Forest, Van Etten, NY
- Seneca Lodge, Watkins Glen, NY
- Angus Glen Farms, Watkins Glen, NY

For more information on registration fee, lodging and to register visit:
cceschuyler.org/events/2024/05/17/nyfoa-nw-conference

Sponsored by:

NYFOA New York Forest Owners Association
Northern Woodlands
Cornell University Cooperative Extension Forest Connect
ESF State University of New York College of Environmental Science and Forestry

Effects of Climate Change on New York Maple Syrup Producers

By Paul Renaud

In recent years, mounting evidence has made it clear that the dramatic pace and scope of climate change will have major impacts on woodlot owners throughout our region. These changes will also affect those who earn their livelihood from value-added forest products, such as maple syrup producers.

While there are likely to be both good and bad impacts on maple syrup producers due to climate change, overall, the effects will be negative. On the plus side, longer summers mean longer growing seasons for maple trees. However, in most regions a longer growing season will increasingly be accompanied by periods of extended drought. Dry soils in turn can hinder root growth and performance. As maple syrup producers we are well aware that anything negatively effecting maple tree roots is a concern because the roots are the origin for sap movement in the spring.

Longer, hotter summers also increase the opportunity for greater impact from invasive species, native and invasive insects, as well as diseases. While these negative factors impact existing maple trees, the longer, hotter summers also have the potential to increase seedling mortality rates. Younger trees must also increasingly compete with invasive tree and undergrowth species that may be better suited for hotter and drier climates.

The combined effect of increased premature tree death of established mature trees, and the diminished replacement rates from younger trees will cause the viable range for sugar maple habitat to shift northward over time. While this may be good news for producers in central Quebec and northern Ontario, it is of long-term concern for producers in New York and most of the USA. Fortunately, as maple trees can have a lifetime of over 100 years, the falling level of replacement will take several decades to reduce many sugarbushes to uneconomic levels of tree density. But as existing sugar maples die off, they will be less likely to be replaced, causing the shift in habitat.

Of far greater short-term concern is the impact of severe weather events, particularly windstorms and ice-storms. In 2022 a derecho event narrowly missed producers in New York as it tore across Ontario & Quebec, causing widespread loss of pipeline infrastructure and otherwise healthy, productive mature trees. Wind events continue to increase in both frequency & severity, and previously rare tornado-scale events are occurring both spring & fall across eastern North America.

Unlike other agricultural harvests that can be easily insured against annual climate-related losses, maple syrup producers are keenly aware that the loss of a healthy mature tree means the loss of

Sap pipelines help increase efficiency and extend the sugaring season.

up to 40 years of harvest until a maturing tree can replace it. Currently there is no crop insurance scheme available to deal with this magnitude of income loss.

As we progress from summer & fall into winter, we can expect to see more precipitation falling as rain, which will reduce the snowpack that typically insulates fine roots from damage. And as the variability of temperature change fluctuates more wildly in spring, maple syrup producers can expect more spring frost events occurring during the vulnerable budbreak period, making both the prediction of buddy sap (sap with an off flavor produced once trees start to break bud and leaf out) development more difficult as well as causing leaf dieback. Trees will need to apply more of their energy to leaf replacement which will tend to hinder both tree growth and canopy development. A reduced canopy will cause lower sap production.

The same sudden changes in spring temperatures can result in shorter seasons, and producers have seen end-of-season spring dates occurring earlier in the year over time. Similarly, the end-of-season fall dates are occurring later and later. Long term forecasts suggest that over a period of several decades these two sap movement seasons may merge if climate change continues unabated, meaning that maple syrup may become a winter-long harvest. In the shorter-term, shorter seasons will make maple syrup production uneconomic for many smaller-scale producers.

Other economic impacts that accompany climate change include greater difficulty in predicting labor needs (as seasons fluctuate more each year) as well as increasing costs for fuel employed in boiling sap and managing the sugarbush. Labor costs are also likely to increase due to the extra effort required to recover from severe wind events.

The demand for maple syrup may also be affected as consumers increasingly shift their preference towards climate-friendly products. Maple syrup producers who are demonstrably climate-friendly will have an advantage over those who are not. This trend will likely grow much in the same way as the organic trend overtook the industry in the past.

Fortunately, maple syrup producers can take several actions to improve their resiliency against climate change, even if we cannot individually prevent or adapt to it:

- Biodiversity in the sugarbush is the best mitigation for invasive species/ insects/disease. Any monoculture is a fertile ground for any invasive threat that can thrive in it and monoculture maple sugarbushes are no exception. Biodiverse tree species slow the advance of these invaders and give maple trees more opportunity to recover should they become afflicted. Biodiverse wildlife also act as natural predators for invasive insects. Try to promote 20 – 30% biodiversity.
- Depending on the configuration and topology of your sugarbush, coniferous tree windbreaks planted/encouraged at the periphery of the compartments in your sugarbush can help limit damage from many wind events. As ice storms wreak greater havoc on coniferous trees, try to keep your infrastructure away from them as best you can.
- Thinning practices need to be revisited as tighter packing of trees helps canopy trees support each other during windstorms. Unfortunately, we

The author uses an electric snowmobile to facilitate getting around the sugarbush.

also know that tighter canopies may mean less sap production per tree, so try to thin only on the sides of trees, not in the usual direction of winds in your sugarbush.

• Keep potential recovery trees "pre-positioned" should mature trees be lost prematurely. A "recovery" tree is an immature adult tree approx. 10-20 ft. in height that is waiting for a break in the canopy to shoot up. While it still may take 5 – 10 years for an immature recovery tree to replace a lost mature tree, it is better than waiting 40 years.

• Maple syrup producers in southern regions should encourage red maple to replace sugar maples as they ultimately die off. Red maples can also be harvested for sap and are more heat tolerant. In regions where there is a risk of greater flooding, silver maples can be encouraged as they are more tolerant of wet growing areas.

• Maple syrup producers who are not using pipelines to increase the scale of their operations can consider doing so. With appropriate sanitation practices, pipelines enable trees to be tapped during winter, reducing the need to try to guess when the spring thaws will start as seasons get more variable over time.

• Temperature variations are increasingly greater during the day, with alternating cold nights followed by warm days being replaced by fewer cold nights and several days in a row of warmer days. This will shut down natural sap flows, so producers not using vacuum systems should migrate to 3/16" pipelines which provide natural suction under gravity flow. This will enable sap extraction during several days of warm weather not interrupted by cold nights.

• Single-year production losses due to climate events can be insured using crop insurance in many jurisdictions. While this will not protect against multi-year losses, it can soften the blow and help mitigate losses from smaller-scale events. Infrastructure insurance can also be purchased for pipelines and pump houses located in the sugarbush.

Maple syrup producers can also contribute by lowering their own emissions in producing syrup. 80 - 90% of your emissions are from heat energy used to evaporate sap into syrup. It does not matter what the fuel source is (wood, pellets, biomass, oil, propane, etc.), they all emit CO2. Renewable fuels are just as much a part of the short-term problem as fossil fuels because they are only carbon-neutral over the lifetime of a tree. Use of wood fuel does not provide emission reduction within 20 years to prevent greater climate impacts.

There are several strategies maple syrup producers can consider for reducing emissions:

• Reducing the volume of sap to be evaporated via reverse osmosis (RO) provides the greatest "bang for the buck." The indirect emissions from using electricity are 100x less compared to direct & indirect emissions from any other fuel source. While quality of syrup is affected by high levels of brix reduction prior to boiling, there is no scientific evidence that quality or chemistry of syrup is affected by reducing sap to a low level of 6-8 Brix – a 50% reduction in total volume of sap.

• Where possible, try to replace the use of fossil fuel with electricity. The embedded carbon in power generation is much lower in the maple syrup producing regions of New York than it is in the rest of the state. Using electric chain saws, ATVs, pumps, ROs, etc. will reduce your emissions overall.

• Increasing the heat efficiency of the evaporation process is important. Oil & propane-fueled evaporators are generally 90% efficient due to employing the use of condensing heat as part of their operation. Most wood evaporators are less than 50% efficient out-of-the-box because they do not employ all the heat available from secondary combustion of gases released by burning wood. Fortunately, it is relatively easy to modify most wood evaporators to employ secondary combustion. Older evaporators over time can be replaced by the emerging electric evaporators that use compressed steam to accelerate evaporation.

• Keeping the heat in the evaporator and not in the chimney is essential. If your chimney temperature is over 500 degrees F you are losing too much heat up your chimney. The best way to reduce the rate of air movement up the chimney varies based on the type of evaporator. Non-forced air evaporators can employ a draft control on the stack and fan speeds in a forced air evaporator can be better balanced.

Ice rain.

Reducing emissions also reduces the amount of fuel you will consume, which reduces both your cost and labor. There is no false choice between being climate friendly and being more efficient.

Paul Renaud is a distinguished member the International Maple Syrup Institute (IMSI), and a member of both the Ontario Maple Syrup Producers Association (OMSPA) and the Ontario Woodlot Association (OWA). He was North America's first provably carbon neutral maple syrup producer, and is currently active in assisting other maple syrup producers achieve the same status. The net-zero page on his website (www.spiritintheforest.ca) provides helpful info for both commercial-scale and back-yard maple syrup producers looking to be more climate friendly.

The New York
Forest Owner
A Publication of The New York Forest Owners Association

Non-Profit Org.
U.S. Postage
PAID
Syracuse, N.Y.
Permit No. 999

NYFOA
New York Forest Owners Association