

# The New York Forest Owner

A PUBLICATION OF THE NEW YORK FOREST OWNERS ASSOCIATION

*For people caring about New York's trees and forests*

September/October 2020



*Member Profile: Stacey and Jeannine Kazacos*

*Volume 58 Number 5*



**THE NEW YORK  
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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.



[www.nyfoa.org](http://www.nyfoa.org)

**COVER:** Front cover: Jeannine, Stacey, sons Stefan and Joseph, and their trusty dog Aki. For member profile see page 21. All photos courtesy of the Kazacos'.

# From The President

The benefits of membership in the New York Forest Owner's Association continue to accrue over time in many different ways. Our peer-to-peer learning opportunities, whether in print or in-person, are priceless.

The print communication tools, including the *New York Forest Owner* magazine, e-newsletter (The Woodlot), Facebook and chapter newsletters are valuable "at your fingertips" resources not only for forest owners but also those



individuals interested in all that forests have to offer. As routinely seen in the NYFO magazine, the regular columns, "Ask a Professional," "Wild Things in Your Woodlot," and "Woodland Health" offer expert advice and educational opportunities for all readers.

The "Member Profile" column, although similar in many ways also highlights our members' considerations and thought processes about the scope and extent of their forest activities. Oftentimes the member addresses both successful forestry practices and those that may be considered "opportunities for improvement." The magazine is a valuable educational resource at the time of publication and also is an essential long-term reference tool.

Beyond the written resources, NYFOA's in person peer-to-peer activities (whether formal or informal) offer additional learning and training opportunities. Given the current social activity restrictions, many NYFOA members have had the good fortune to be

able to spend more time in their woodlots. With that time, some projects were started, some projects were completed, and new projects were identified. During these past several months, I have had the opportunity to speak with many forest owners and have visited a few woodlots (utilizing appropriate precautions), and learned about the individual projects other forest owners have underway. These projects ranged from pond building, to invasive management, to portable saw milling, to carbon credit planning, and more. These discussions were highly interactive and we all came away with a better understanding and broader perspective about the myriad opportunities awaiting us in our forests.

Sharing knowledge is a guiding principle for NYFOA and in the words of Benjamin Franklin "An investment in knowledge always pays the best interest."

Given the changing health regulations in NYS, planning for live programs and woodswalks has been challenging. As more chapters organize fall programs (live or virtual), all members are urged to keep addresses and e-mails updated, so that you receive both NYFOA and local chapter communications on a timely basis. The NYFO magazine is published 6 times yearly and distributed via USPS mail. NYFOA's e-newsletter, The Woodlot, is published monthly and forwarded via e-mail. Chapter newsletters are published routinely and either mailed or e-mailed to their members.

Also, The NYFOA website and Facebook page should be visited often for updates.

Take care and stay safe.

—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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# Nature on the Move

PAUL HETZLER

To a highly mobile species like humans, the fact that other animals relocate their families — or entire populations — isn't surprising. We know historical migrations have been the norm, though the fossil record shows that in general, these changes happened slowly. For example, the "Great American Interchange," in which northern animals spread southward and South American critters expanded north during the Pliocene Epoch, took a million years. Give or take a few, I assume.

Well, thanks to climate change, an eye-popping number of species are now actively seeking new real estate. As reported in an April 27, 2017 *National Geographic* article, half of all animals are moving apace into cooler habitats.

Land species are shifting their home ranges — primarily north, but some to higher elevations — at an average rate of a mile annually, while marine species are progressing toward the poles at about four miles per year. Some transitions are drastic. A study done at Plymouth University in the UK found that Atlantic cod have shifted northward 125 miles in the past decade.

Having lived in New York state all my life until moving to Canada last year, it's possible this phenomenon applies to me as well. An arborist can migrate, but unless trees are wondrously furtive, I'm pretty sure they don't travel. Yet a report from the US Forest Service's Northern Research Station indicates that 70% of eastern tree species have already begun to shift their ranges to the north. The authors admit this is not a new trend, but rather the hastening of an old one. They say that:

"Tree ranges in ancient times certainly shifted according to changing climates, but the changes were relatively slow. Fossil plant and pollen records show tree species' ranges shifted northward a rate of 50 km per century as temperatures rose after the retreat of the North American ice cap. Such

shifts are sometimes called 'tree migration,' but they are really changes in a species' population density and range. The more accurate term is 'tree range migration.'"

OK, so Mother Nature apparently moved tree species an average of 50 kilometers (31 miles) every hundred years. This helps put in perspective a study report entitled "Shifting with Climate? Evidence for Recent Changes in Tree Species Distribution at High Latitudes" which was published in the journal *Ecosphere* in July 2014.

The study, conducted by Laura Boisvert-Marsh, Catherine Périé and Sylvie de Blois, examined 11 tree species common to eastern North America: balsam fir, red maple, sugar maple, yellow birch, paper birch, American beech, hop-hornbeam, white spruce, black spruce, trembling aspen, and Eastern white cedar. Specifically, they looked at range alterations between 1970 and 2014.

I admit that this is a highly technical paper, and I may have pulled a muscle trying to understand it all. The study assessed changes at several different latitude points, and also compared sapling redistribution with that of larger trees. In addition, the authors noted that factors other than climate change no doubt had an effect on tree range migration as well.

However, their report concluded that "Five out of the eleven species examined (sugar maple, red maple, paper birch, American beech, and trembling aspen) showed significant northward migration." What stood out to me was that taken as a whole, they found that since 1970, "The average overall [range] shift was 111.2 km [69 miles] at 49° N." Contrast that with historical natural movement of 50 km in a century.


Scientists at the US Forest Service believe that by the end of the century, at least 8, and possibly as many as 27, tree species will have moved 200 kilometers

(124 miles) north. In fact, they project that in the year 2100, sugar maple will exist almost exclusively in Canada.

There may well be exceptions. It's possible that enclaves of species which are projected to move out of the region will be able to survive in isolated nooks and crannies of the Adirondacks and other similar terrain. Variation of slope and aspect in the mountains creates "Climate Refugia," micro-habitats conducive to a broad spectrum of tree species. These refugia resist change — they are not immune to it, but adjustments happen more slowly there.

Change is sometimes good, but it's always scary. Luckily, we do have agency in determining our future. According to the Canadian Association for Educational Resources, "By 2100 the atmospheric CO<sub>2</sub> concentration (the gas responsible for most temperature change) will be between 540 and 970 ppm," depending how much carbon dioxide we pump into the air.

The huge discrepancy between those two numbers offers us a chance to slow the rate at which tree species march northward. It's hard to feel motivated when we know our decisions are a drop in the pool. Well, drops matter. It takes something like 50 billion drops to fill an Olympic-size pool. If each Earthling coughed up (figuratively, please) 6.4 drops, it would be full.

No matter where we live, everyone has access to a dropper of some sort. Maybe it's learning we don't need 4WD if we get snow tires. Maybe it's planting a tree. Or biking to work, or switching to LED bulbs. Every drop makes it less likely the next generation will ask "Hey grandma (or grandpa), tell me that story again about when maples grew here." 

*Paul Hetzler is an ISA-Certified Arborist and a member of the Society of American Foresters, the Canadian Institute of Forestry, ISA-Ontario, and NYS Arborists. At the moment, he has no plans to migrate farther north.*

# 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](mailto:pjs23@cornell.edu) with an explicit mention of "Ask a Professional." Additional reading on various topics is available at [www.forestconnect.info](http://www.forestconnect.info)

## What is tree vigor and why does it matter

### Question:

I read and hear that tree vigor is important. What is tree vigor and how can I use that to guide the management of my woodlot? (Kristina F., CNY)

### Answer:

Dead and dying trees are a normal part of woodlands, and have value for wildlife, aesthetics, and nutrient cycling. However, woodland owners want predominantly healthy trees. Tree health is often thought of as the absence of biotic or abiotic factors that stress the tree and limit its physiological capacity. Stress results in less growth and an increased risk of death. Tree vigor is one way to describe aspects of tree health. The details of measuring tree vigor and using that in management decisions is the subject of considerable research.

### Defining Tree Vigor

Tree vigor is variously defined depending on how the information of vigor is to be used. In the most rigorous assessment of vigor in research to determine how different events (e.g., defoliation, thinning) impact tree productivity and survival, vigor is the ratio of the amount of wood growth on the stem per unit

of leaf area. Leaf area is usually described as square meters of leaf surface area. Vigorous trees grow more wood than less vigorous trees for the same amount of leaf area. This ratio describes the efficiency of photosynthesis to produce wood. In other applications of the use of tree vigor, it is defined by visual assessment for symptoms of the crown and stem for the likelihood the tree will have reduced growth, die or have reduced economic value.

Before further delving into details of tree vigor definitions, a similar term needs attention. The term tree vitality appears in some scientific literature, particularly European forest sciences that investigate tree response to environmental stressors. Tree vigor is commonly used in North America. Tree vitality and tree vigor share many attributes, though they seemingly are not synonymous. Tree vitality incorporates and is ultimately based on tree survival, which is an outcome of low tree vigor (Figure 1). There is significant overlap of these terms, but few attempts have been made to rigorously define their unique and respective attributes. Perhaps this isn't surprising given the nuances within the use of tree vigor as part of North American forest science, and presumed similar nuances for definitions of tree vitality.



Figure 1. The ability of a tree to survive requires its ability to overcome direct and indirect stressors. These stressors either directly injure the tree or indirectly prevent the tree from acquiring the resources it needs.



Figure 2. Many causal agents can injure the stem. Depending on the nature and size of the injury, the vascular tissue that carries water and sugars may be reduced and the tree's ability to feed the roots and crown may lessen its vigor.



*Figure 3. A diameter tape is wrapped around the circumference of the tree, and the unique calibration allows direct recording of tree diameter. A 3.5 ft staff is placed on an aluminum nail about 1 ft above the ground for accurate repeated measurement.*

The definition of tree vigor that is based on the ratio of wood growth to leaf surface area is known as “growth efficiency.” Tree growth happens because of photosynthesis that produces carbon, which is the core component of starches and sugars used by the tree. Trees allocate the carbon they produce to different tissues (e.g., leaves, roots, wood, fruits) based on a priority of importance of that tissue to tree survival. From most to least important are growth of leaves, roots, buds, storage tissues, stem wood and defensive compounds, and reproductive structures. Thus, the comparison or ratio of stem wood production and leaf surface area are at opposite ends of the spectrum of priorities. If the ratio of

wood to leaves is high, the tree has been successful at producing sufficient carbon to allocate that carbon to a less important component. An analogy occurs in most families who each month consistently pay high priority bills first (e.g., mortgage, car payment, NYFOA dues) and only allocate funds to lower priority expenses (e.g., elaborate vacations) when possible.

### **Measuring Tree Vigor**

Most people will neither want nor be able to directly measure tree vigor as growth efficiency. Other indirect metrics of tree vigor relate to either the growth of tree stems or to signs (i.e., direct evidence) and symptoms (potential evidence) associated with impaired stem growth (Figure 2). These would be approximately analogous to “biomarkers” in medicine, and similarly variable in their predictive power. Note that these indirect metrics focus on the tree’s low priority or ability for growth of wood, and presumably assume a fairly constant leaf area. Vigor is ultimately an assessment of an excess of carbon available for stem diameter growth. The indirect metrics that measure stem growth have value only when compared to the same or similar metric for a time period that serves as a baseline (e.g., normal growth conditions), an alternative growth condition (e.g., prior to thinning, during a defoliation event), or a comparable tree thought to be “normal.”

A common and feasible metric for woodland owners is basal area increment (BAI). Basal area is the area of wood of a tree produced at a specific height (i.e., 4.5 ft) on the stem near the base of the tree (note – the basal area of the stand, usually reported in square feet per acre, is a related but distinct concept). The “increment” is the change between two points in time. Basal area is easy to calculate based on the measurement of tree diameter; for tree vigor calculations a diameter tape, not a scale stick, is required (Figure 3). One use of BAI is a comparison of



*Figure 4. Forks having an acute angle are prone to splitting, as shown in this basswood tree. Snow loading and wind on the branches prevent healing. The lack of structural integrity increases the likelihood of crown failure.*

*continued on page 15*

# Wild Things in Your Woodlands

MAGGIE LIN

## EASTERN BOX TURTLE (*TERRAPENE CAROLINA CAROLINA*)



*The eastern box turtle has a distinctly high-domed, rounded, hard upper shell, and can be distinguished from other box turtle subspecies by both its vivid yellow and orange shell markings and its hind feet, which have four toes. They typically grow to about 4" by 6" and live for 25-30 years. Some box turtles have been known to live to over 100 years old! The eastern box turtle is found along the eastern United States from Maine to Florida, and west to the Great Lakes region and Texas.*

**E**astern box turtles live in a variety of vegetative areas in southern New York and are especially common in the southeast of the state and on Long Island. As the state's most terrestrial turtle, they are found in open woodlands, field forest edges, shrubby grasslands, and marshy meadows, often near streams and ponds. They maintain their internal body temperature by adjusting their activity — basking in the sun in cooler weather, and seeking cool, moist spots under logs and in decaying leaves when it is too warm during the day. During hot and dry periods, eastern box turtles seek shallow pools or wetlands to soak and cool off.

As opportunistic omnivores, eastern box turtles eat an incredibly wide variety of plants, mushrooms, and fruits as well as insects, slugs, fish, small amphibians, eggs, and animal carrion. The turtles sometimes eat poisonous mushrooms, and the toxins that accumulate in their body can make them poisonous to eat! A

box turtle's dietary preferences change throughout its life — when they are young and growing rapidly, they tend to be preferentially carnivorous, and hunt for high-energy foods in ponds and streams. Once they reach age five or six, they shift to a more herbivorous diet and forage more frequently on land.

Box turtles operate in a home range with a diameter of about 230 meters (750 feet) or less and have an innate homing instinct which helps them find their way back home from an unfamiliar area. The home ranges of individual box turtles often overlap, although the turtles don't show any antagonism towards each other aside from the occasional sparring between males. Eastern box turtles walk energetically with their heads upright, but when they are threatened, they can pull their body into their shell to wait out the danger. Because box turtles have a hinged plastron (underside of the shell), they can almost completely shut their shell with themselves inside.

This makes it extremely difficult for predators to eat adult box turtles.

When winter arrives in northern regions like New York, eastern box turtles find a hibernaculum — a comfortable place where they can be more insulated from the cold — in places like stream bottoms, stump holes, or mammal burrows. Sometimes a turtle may return to the same hibernaculum every year. In October or November, eastern box turtles go into their hibernacula, becoming very lethargic and entering brumation, the cold-blooded equivalent of hibernation. If the winter is particularly warm, sometimes a turtle will wake up and find another resting site. The turtles finally emerge again in April to mate and nest.


For eastern box turtles, mating season takes place from April to October, while nesting season occurs from May to June or July. After reaching sexual maturity around the age of 5, male eastern box turtles search for a



female, becoming even more active right after a rainfall. Females, however, don't mate every year. They can store sperm, and therefore lay fertile eggs up to four years after mating! Like many other turtle species, eastern box turtles show temperature dependent sex determination. A female will usually lay about four or five eggs in a clutch, burying them in sandy soil with her hind legs. They incubate for about three months, during which time the sex of the offspring are determined — warmer nests produce females, while cooler nests produce males. Once the offspring are fully grown, males and females can be distinguished in many ways: by their eye color (red for males and brown for females), the shape of the underbelly of their shell (concave for males and convex for females), or their hind claws (short, thick, and curved for males and long, thin, and straight for females).

Although not listed as endangered, eastern box turtles are a species of special concern in New York State. This designation does not provide additional protection for the turtles: it only signifies native species that warrant attention and consideration, but for which the Department of Environmental Conservation does not have specific information that warrants listing them as endangered or threatened in NY state. A large detriment to the eastern box turtle population is the pet industry. Although they are no longer taken from the wild in large numbers for commercial purposes, individual turtles are often caught as personal pets and later

released, threatening native populations by introducing disease.

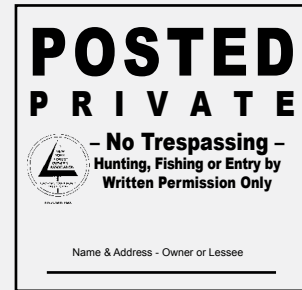
Protected lands are a great way to help the eastern box turtle. Their energetic behavior often puts them in proximity to people and pets, and they are frequently harmed by vehicle traffic when near roads. Undeveloped areas have less traffic, which can help reduce road mortalities of turtles and allow them to move more freely around their habitat. Protected lands also ensure that habitat for the eastern box turtles remains unfragmented, and they alleviate pressures on turtle populations from increased development for suburban areas. You can more directly help protect the eastern box turtle by cleaning up waterways, keeping an eye out for turtles when mowing your lawn, or by helping a turtle cross the road safely. If you find an injured turtle, contact a turtle rescue center or wildlife rehabilitator. Make sure to never remove a turtle from its home territory! Your stewardship helps these unique land turtles thrive and continue to enjoy being wild things in your woodlands. 

*Maggie Lin is a Program Assistant for the New York State Master Naturalist Program, directed by Kristi Sullivan at Cornell University's Department of Natural Resources. 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: Ken Thomas*

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# Why Forest Owners Need the Game of Logging

BY ERIC JENKS



If you have any interest in using a chainsaw to maintain your property, you've probably heard of Game of Logging. "This should be the first thing you do when you're considering becoming a forest owner," said Dan Carusone, a program coordinator for Cornell Cooperative Extension (CCE) of Warren County. "There's a great deal of trail maintenance, thinning, etc., where a chainsaw comes in handy." Chainsaws are one of the most dangerous tools to run improperly. But when you know how to use it properly, it becomes one of the most efficient tools that you could ever own. Game of Logging is the most comprehensive workshop on chainsaw safety there is. It starts with the basic anatomy of a chainsaw, how to maintain it, sharpen the chain, and then starts in with the field work of how to cut logs on the ground and how to drop trees. Each participant in the course has to do all of that, including dropping two trees. That last part makes hosting the course difficult, as we have to find community members

where having 20 trees dropped at one time on their property isn't a big deal.

In co-operation with Bill Lindloff's ProCuts, one of only seven authorized instruction organizations in the country, CCE of Warren County tries to offer the course several times a year. "Normally participants pay \$150 per course, but we've subsidized it for the past two years through a grant from International Paper," says Carusone. "All you pay is \$45, and you get the best chainsaw course there is. I would say for a forest owner, there's a great deal of trail maintenance, thinning, etc." This should be the first thing you should do when you're considering being a forest owner. Participants are required to bring their own gear to classes. "You do need to bring your own chainsaw," said Carusone. "One with a 16 inch bar is recommended. It's the happy medium between weight and capability. You also need all of your own safety equipment. Steel-toed work boots, long pants, chaps (preferably the kind that bind the chain when they're cut into), hard hat,

goggles, ear protection, gloves, and a long sleeve shirt regardless of the weather. It would be more than once that my chaps have done the job of stopping an errant chain. And don't forget a lunch! They only take a half hour lunch break before getting right back to it."

Currently, CCE has three classes coming up on September 9th (storm damage), 10th (Game of Logging Level 1), and the 11th, though the first two days of classes are already full. The class on the 11th is Game of Logging Level 2, which requires Game of Logging Level 1 before you can take it. According to the Game of Logging website, level 2 focuses on maximizing chainsaw performance through basic maintenance, carburetor setting, and filing techniques. Limbing and bucking techniques are introduced, spring pole cutting is covered and more felling is practiced. The class on the 9th is a storm damage training class, where you're working on clearing trails and learning the particular dangers and the way trees might fall in the aftermath of a storm. CCE of Warren County is hoping to host another set of classes in late October, provided Lindloff has an open date. "If not in October, we will have another round of courses in the spring," said Carusone.

For those that are hoping to find a class sooner (albeit one that isn't subsidized), they can contact Lindloff directly at [blprocuts@aol.com](mailto:blprocuts@aol.com), or by phone at (607) 786-5462. 📞

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

## 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
Allen P. Kambe	NFC	Sarah Reynolds	WFL
Nick Kurpita	CNY	Roy Simmons	SFL
Don Lewis	AFC	Joan Widmann-Blaisdell	NAC
David Mazerbo	WFL	Linda York- Ryan	WFL
Lisa Meehan	SAC		

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# 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

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## FOREST PEST UPDATE... BUGS DON'T KNOW WHAT LOCKDOWN IS!

BY MARK WHITMORE

Forest pests didn't seem to get the message about social distancing and staying at home. It would be entertaining to see one with a mask! This has been an active summer for forest pests and I thought it would be good to highlight a few of those causing the most concern for home and forest owners. Early this summer I received a number of calls about a resurgence of gypsy moth (*Lymantria dispar*) defoliation in the southern tier and Finger Lakes areas. DEC surveys are not finished but gypsy moth has not caused such widespread defoliation in these areas for a while. It's not only bad here in NY but defoliation in southern Ontario doubled this season to near 250,000 acres and there has been an upswing in Pennsylvania as well.

Gypsy moth has been present in our forests for years and since moving through the state in the 1980's has been kept under control by pathogenic fungi and virus except for periodic outbreaks primarily in areas of the southern Catskills and Hudson valley mostly in ridgetop oak forests. There is a ton of information available on the web (<https://www.dec.ny.gov/animals/83118.html>) so I'm not going to belabor a detailed discussion of biology, but focus on what you can do to mitigate the damage if you've been impacted. According to a recent DEC survey, one of the more heavily

defoliated areas just happens to where I forage for summer mushrooms, in the Finger Lakes between Seneca and Cayuga Lakes. I don't recall much going on with gypsy moth last year but this year the defoliation was extensive. My feeling is that the populations are building because there were many oaks in the area that were not impacted. Perhaps the pathogens were not as effective this year because of the dry spring. The thing to remember is that just one year of defoliation is not likely

to kill your trees, they have reserves that allow them to re-foliate. However, with repeated defoliation in subsequent years there can be mortality, especially when trees are growing on stressed sites.

As a homeowner or small woodlot owner your capacity to get outside and look carefully at what is going on will help frame your management decisions. The best thing to do is to evaluate the number of egg masses (Figure 1) on your property. NYSDEC



Figure 2. Darkened leaf areas associated with beech leaf disease. Jim Chatfield, Ohio St. Univ.



Figure 1. Gypsy moth egg masses on red oak. Leslie J. Mehrhoff, Univ. of Connecticut, Bugwood.org

has an online “Field protocol for sampling Gypsy moth egg masses” ([https://www.dec.ny.gov/docs/lands\\_forests\\_pdf/gmprot2005.pdf](https://www.dec.ny.gov/docs/lands_forests_pdf/gmprot2005.pdf)) that is designed to help you through the process in late summer and fall and then predict the likelihood of defoliation or even mortality the next spring. Armed with this information you can consider management options which include treatment with the microbial *Bacillus thuringiensis* kurstaki strain (Btk) or Mimic, an insect growth regulator.

Btk is most commonly used in NY and is applied to the young foliage early in the growing season so when ingested it kills the developing young caterpillars. Btk can be applied from the ground to individual trees and is often applied aerially. There are a number of aerial applicators that work

in NY and if your property is not large enough to make the application economically feasible I’d see about contacting neighbors in a similar situation to increase the application area and reduce costs. One of the main problems with Btk is that it must be applied under ideal conditions because it can be washed off leaves and photodegrades rapidly. Timing is everything. Mimic is an option that has been used in other states with great success but is currently not registered for use in NY, primarily because the market has not been in place. Perhaps that will change if gypsy moth become a more persistent problem in NY. The advantages to Mimic is that it only impacts insects and will persist for a few days longer than Btk and is not as sensitive to environmental degradation. Colleagues in Pennsylvania have been

using it successfully for years and but feel that repeated aerial spraying needs to be limited because of potential non-target impacts on other insects.

Emerald ash borer (*Agrilus planipennis*, or EAB) continues its relentless march across the state and just recently was detected in one of the last uninfested areas, the Adirondack Park. This is really no big surprise to anyone who has experienced an EAB infestation firsthand. The operational phrase with EAB is if you don’t have it now, you will, the question is when. That’s a tough but important question to answer if you’ve some ash timber to sell or if you’ve ash threatening your house. I’ve counted 15 ash that could take out the power lines along my driveway. You can imagine my relief when contractors for the power company showed up to maintain the

*continued on page 14*


## Woodland Health (continued)

lines last year. I mentioned all the ash and the potential problem only to learn that they were only going to trim them. So now I've got 15 nicely trimmed ash that are still threatening the power lines. Ugh. The big question in my mind now is how much time do I have before EAB arrives and kills them. I've been watching EAB move across the landscape since it first arrived in the state. It moved rapidly in areas of the Ontario plain where ash density is high, yet much more slowly than I first thought in areas with mixed forest. In summer, crown thinning is a good indicator where EAB might be, but white ash declines with disease in wet soils so the most reliable thing to do is wait until winter when woodpeckers begin feeding on the fat larvae. I've got my eye on some symptomatic ash about a mile from my place and as soon as I see woodpecker feeding on them I know it's either time to treat my trees or get them removed. There is a lot of great information about EAB on the NYSDEC website: <https://www.dec.ny.gov/animals/7253.html>

A relatively new pest in the forest is beech leaf disease (BLD). It was just a few years ago in 2012 that researchers in eastern Ohio reported the mysterious leaf striping symptoms (Figure 2) and eventual tree mortality, yet could find no causative agent. Since then, research has revealed that a tiny, worm-like creature called a nematode living within the symptomatic leaf tissue is the likely cause of BLD. This is great news, but the big question in our minds is how does it move around? Survey work in 2019 by the DEC forest health group found BLD in extreme western NY, Long Island, and Westchester county. The chilling thing is that even given a much reduced effort this summer they have found BLD to be much more widespread. It is not only the

fact that they are surveying new areas, indicating detection of previously unknown infections, but they are finding it in areas previously surveyed indicating rapid spread. BLD appears to be spreading, but how? If you think you might have BLD on your land I encourage you to submit a sample to the DEC Forest Health Diagnostic Lab using these instructions: <https://www.dec.ny.gov/lands/79716.html>

Last but not least, the hemlock woolly adelgid (*Adelges tsugae*, HWA) continues to expand its range in NY. Our lab has been looking at HWA winter mortality for the past 7 winters and we've found over the last two winters mortality to be much lower than normal. That means more HWA are surviving to reproduce in spring and populations have been building, threatening trees weakened by past infestation, and providing "seed" for new infestations. This is of special concern in some of the iconic state parks, the Catskills, and especially in the Adirondacks where hemlock forests are dense, contiguous, and widespread. HWA has been creeping its way into the Adirondacks and causing alarm. In

2017 a few trees were found infested on Prospect Mt. near Lake George and were rapidly treated to keep HWA from spreading. In 2019 there was a detection of a small population in Fulton county, just outside the blue line, and more importantly just last week there was a detection in an area of extensive hemlock forest along the shore of Lake George, about 14 miles northeast of the Prospect Mt. infestation. Delimitation of the new infestation is critical and will help determine management options. At this time our lab's work on biological control with predators continues with more releases than in the past, but it's not moving as fast as HWA. Treatment of individual trees with insecticides remains our most valuable tool to slow HWA spread in the Adirondacks, buying precious time and protecting the ancient hemlock forests until we can successfully implement the long-term biological control. For more information: <http://www.nyshemlockinitiative.info> 

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

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*Figure 5. This sugar maple crown shows extensive crown dieback with modest recovery. It is growing in a poorly drained pocket of soil and likely has a poorly developed root system that makes it vulnerable to periodic droughts.*

the direct value between time periods or relative BAI (rBAI) which is BAI as a percentage of total basal area for that tree at the beginning of observation, and the change of rBAI through time.

An example of BAI may help (Table 1 on page 18). At Cornell's Arnot Forest there are numerous tagged sugar maple trees in the research sugarbush.

These trees are annually measured for stem diameter (and other variables) to inform syrup production management practices. The trees reported here were all upper canopy codominants of similar size (Table 1). Observe that tree growth is not assured; tree #2805 didn't grow from 2018 to 2019. Also that rBAI can be similar among trees

in similar conditions as seen for 2018. The utility of rBAI to assess changes in tree vigor is illustrated for 2019 where the values differ. Continue reading to learn what changed for each tree as related to growth and thus vigor. The measurements to calculate BAI are quite simple and involve annual measurement of tree diameter at the same height (Figure 3). Woodland owners who are participating in the Cornell/NYFOA Northeast Timber Growing Contest ([www.timbercontest.com](http://www.timbercontest.com)) already have these data.

The other category of metrics to assess tree vigor relate to features of the trees that are thought to impact tree growth, or sometimes tree longevity. Indicators of longevity may or may not also predict growth. These visual metrics are typically called defects, and represent a range of conditions that either reduce tree growth (e.g., stem cankers, crown dieback) or increase the likelihood of tree death (e.g., open seams in forks (Figure 4), tree lean greater than 10°).

### **Applying the Concepts of Tree Vigor**

The values that owners assign to their trees likely influence how the owner perceives tree vigor. Few events trigger an owner's concern more than seeing a tree, especially a group of trees, in poor health and thus showing low vigor. Some owners are particularly interested in optimizing the health of trees for a variety of tangible outputs such as timber, fruit crops for wildlife, or maple syrup production. In addition to tangible outputs, vigorous trees are considered to be less vulnerable to insects and pathogens.

Woodland owners interested in tree vigor can tag 10 to 15 healthy trees of their favorite species and measure tree diameter at the identical height each year on approximately the same date (Figure 3). See Table 1 for formulas to calculate rBAI. Make note if the trees are upper or lower canopy and

*continued on page 16*

## Ask a Professional (continued)



*Figure 6. This maple tree was wounded by a tractor tire. The wound did not heal and the wood has started to decay.*

any defects (see below) they have. As you manage your woods, see how these trees respond to your different activities, and also change through time as a result of temperature and rainfall.

Several factors influence whether a tree is vigorous, and some of these factors can be influenced through management. Management can either alleviate or complicate the direct and indirect influence of stressors on how trees allocate carbon to foliage, roots, stem wood, etc. Direct stressors damage tree tissue. Examples include defoliation, root damage, and injury to stems. Indirect stressors reduce access of the tree to necessary resources such as sunlight, water, minerals, nutrients, and temperature. Examples include competition for sunlight, poor site

conditions, or changes in soil hydrology.

In our northeastern forests, there are some factors that influence tree vigor, but that are not typically prioritized for influence via management. The most notable factor not prioritized is the genetics of the tree; the regulation of tree genetics is more common in plantation forestry found in other regions. Tree genetics could be influenced, but the cost is high

relative to the benefit. Exceptions, such as the black walnut genotype that received a US patent, exist. In other cases factors are disregarded because of infeasibility. An example might be dominance of a stand by a tree species that is not ideally suited to that site; dominance might be a result of an unexpected twist of post-agricultural successional fate.

With this understanding for how stress impacts tree vigor, management activities should strive to reduce direct and indirect stressors. It is worth recognizing that activities can reduce a stress (e.g., thinning to reduce competition for sunlight), and a stress might also be reduced because an activity is avoided (e.g., not driving your tractor on saturated soils resulting in root damage).

The annual measurements of trees, or a subset of trees, would be most instructive in assessing tree vigor. More often owners and foresters can only judge a tree based on those features they can see at the time when they are looking at the tree. The



*Figure 7. Seams may form as a result of various injuries, such as abrasion by tires or falling trees, or cracks from localized thawing in winter. Seams may heal with little impact on tree vigor.*





Figure 8. A nail in this tree created a small wound of about 15 square inches. The center section is bare but solid wood. The next band of smooth bark is the callus tissue that is growing over the wound. Beyond the callus tissue is bark.

features associated with indications (favorable and unfavorable) of tree vigor include:

- A crown ideally full of leaves and sufficiently dense that it lacks transparency. Assessing transparency is easier said than done, and its effective use requires training and calibration. The principle though is that leaves photosynthesize, and crowns full of dark green foliage and a high density of foliage are likely more vigorous. Recall that a high priority for a tree is the growth of leaves and buds, which annually form twigs. A tree of low vigor has reduced elongation of twigs which results in the clustering or “tufting” of foliage at the tips of the twigs rather than along the length of the twig. Tufting produces a transparent crown.
- Crown dieback (Figure 5) can happen when foliage demands exceed



Figure 9. The upper crown class includes dominant and codominant trees, and the lower crown classes include intermediate and suppressed. Crown class is the height of a tree relative to its neighbors and corresponds to the amount of light it receives. Lower crown class trees, especially suppressed trees, have low vigor.

the capacity of the root system to provide water and mineral nutrients. Root systems might be impaired due to mechanical damage from equipment or when a tree is “off-site” (see below). Crowns with dieback greater than 50% are considered of low vigor because something caused the dieback and because there is less foliage to photosynthesize. Most owners will notice and be concerned when dieback occurs on 20% to 25% of the crown. Prior dieback can be apparent for many years, and is less concerning if the limitation is corrected and there is robust regrowth of twigs. Dieback doesn’t necessarily reduce the timber value of the tree, but may limit growth which reduces the accumulation of volume and value. If the cause of dieback isn’t resolved, dieback will likely reduce tree longevity.

- Wounds on stems (Figure 6) and seams on stems (Figure 7) that have soft or “punky” wood as evidence of decay are good indications of poor vigor. This conclusion is amplified for wounds greater than 100 square inches and for seams that spiral for more than 1/3 of the circumference of the stem. Wounds without decay and less than

100 square inches are of less concern especially if the callus tissue (Figure 8) around the edge of the wound is thick and appears to be closing the wound. The location and size of wounds and seams can reduce the timber value of a tree and may reduce the accumulation of volume and value.

- Trees with lean may not have reduced vigor if the crown is healthy, but lean greater than 10° is associated with an increased chance the tree will fall. If there are straight sections of the stem of sufficient length, there may be no reduction in value.

- Open seams below forks (Figure 4) are a sign of low vigor and high risk for structural failure. They are also of high risk for someone to fell. These trees often have large and healthy crowns, but they lack structural integrity and thus reduced longevity. They are destined to fail, but will compete for sunlight with neighboring trees until they fail.

- Crown competition reduces photosynthesis and vigor. Competition can occur through lateral shading or by trees overtopping neighbors. The latter describes crown height class among trees of the same age that

*continued on page 18*

Table 1. Example calculations of basal area increment and relative basal area increment. (P. Smallidge, 2020, unpublished data)

Tree #	dbh 2018 (inches)	dbh 2019 (inches)	dbh 2020 (inches)	BA 2018 (sq. in.)	BA 2019 (sq. in.)	BA 2020 (sq. in.)	BAI 2018 (sq. in.)	BAI 2019 (sq. in.)	rBAI 2018 (%)	rBAI 2019 (%)
2805	17.3	17.3	17.38	235.06	235.06	237.10	0	2.04	0	0.87
333	20.3	20.55	20.66	323.65	331.67	335.23	8.02	3.56	2.48	1.10
2814	16.3	16.5	16.65	208.8	213.82	217.72	5.15	3.91	2.47	1.87
2824	15.85	16	16.20	197.28	201.06	206.11	3.75	4.98	1.90	2.52

- dbh = diameter at breast height (4.5 ft), for these trees measured in March of the year
- BA = Basal area (sq. inches)  
= (0.005454 \* dbh<sup>2</sup>) \* 144
- BAI = Basal area increment (sq. inches)  
= basal area in one year – basal area in the previous year (e.g., BAI<sub>2019</sub> = BA<sub>2020</sub> – BA<sub>2019</sub>)
- rBAI = relative basal area increment  
= (BAI for a particular year / original BA 2018) \* 100

results in upper and lower classes or strata (Figure 9). The trees in the lower crown class have reduced vigor and less photosynthetic efficiency. The impact of lateral shading is evidenced in Table 1 and the thinning that occurred in September 2018. The trees are arranged such that the first tree (#2805) had no release from competition and the release of the other trees was, in order, 45, 115, 225 degrees open (i.e., 90 degrees open is one side free to grow). Increased crown openness for these trees seemingly corresponded to an increased rBAI as a metric for vigor in the first growing season after thinning. A full analysis of these data is in process.

- All trees grow well on good sites (i.e., adequate but not excessive moisture, good mineral nutrition, deep soils, etc.), but some trees are less tolerant of less than perfect conditions. Sugar maple is a good example of a “finicky” tree that doesn’t tolerate overly moist soils (Figure 5). Trees growing on a site for which they are not adapted will always have low vigor

because of impaired root growth and inadequate access to soil nutrients. Their low vigor may well result in premature death, but not before they hamper the growth of neighboring trees that might be better adapted.

Tree vigor is a fascinating expression of how trees respond to their local conditions. There is no obligation for owners to try to influence tree vigor. Woodlands continue to survive in the absence of interventions, but the trees that survive may not be the owner’s priority. Understanding tree vigor, and applying management treatments to enhance vigor, will deliver more benefits to the owner. 🌳

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# A Friend in My Woods

JACK McSHANE

Being a woodlot owner for the past 34 years I consider myself one of the luckiest folks on the planet. As a kid I very rarely played ball, and many would ask my mom “where’s Jack,” and the answer was always the same, “he is up in the woods.” The woods, back then on Long Island, were Alley Pond Park where me and few like-minded friends became pre-teen and then teenage hunters bearing slingshots to take chipmunks and the occasional hapless squirrel. Later on, we found our way to Westchester County where the targets rose to ruffed grouse with a shotgun and whitetail deer with a bow and arrow.

Now that I am a little older (82) and the owner of 370 some odd acres of fields and woodlands I content myself with daily treks around these beloved acres where I have been befriended by a local gentleman who will often tag along with me. We met four years ago when I was on my tractor moving some brush cuttings and almost hit him. Sadly, he does have some kind of mental problem that I have not been able to decipher even with having a degree in human psychology, dealing with many disturbed people during my tenure as a NYC police officer for 23 years, and having been called to respond to an individual walking in front of traffic a number of times endangering not only him or herself, but the drivers also. We tagged such an individual as an EDP or emotionally disturbed person, now I am dealing with an EDG or emotionally disturbed grouse.

Yes, he responds to my whistle, will jump up on my knee, gets a free handout of black oil sunflower seeds, and when finished will run right after me. He has become adapted to coming up to the house when I haven’t been around in a while. One time when my wife alerted me to his presence and as I was coming out of the house, I had to close the door quick as he was ready to step in. Once my EDG friend was attacked and chased off by some local ruffian barn swallows as he was indulging in some seed left for him in our driveway.

Among other pleasantries in forest ownership, this one is a rarity, and a personal one, how lucky I am! 🍂



Jack McShane, Andes NY.



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# Member Profile:

## *Stacey and Jeannine Kazacos*

BY JEFF JOSEPH

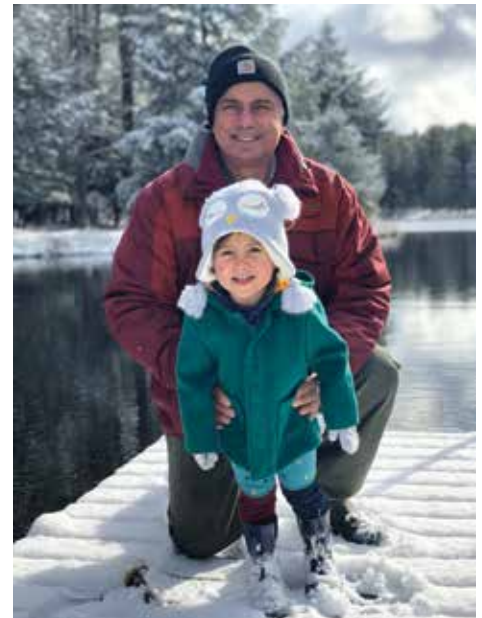
Having both worked in the diplomatic service representing the U.S. in embassies in Europe, Africa, the Middle East, and elsewhere, Stacey and Jeannine Kazacos travelled a great many miles before settling into their current retired life in upstate New York. Jeannine, a French-Canadian, is originally from New Brunswick, and Stacey was born in Syracuse. They met while studying at McGill University in Montreal, spent their working lives travelling the world, and when their respective careers eventually wound to a close, they considered many possible locales for retirement, including Greece, Canada, Alaska, and Southern Africa, but the call of home must have been strong, as in 2007 they purchased a 96 acre wooded property (including a log home) in Mount Vision, Otsego County to which they moved permanently in 2015.

Among the several factors that figured into their selection of this particular property were the ample privacy, a beautiful seven-acre pond, a variety of recreational possibilities, and a diversity of wildlife, but also a proximity to the medical care and shopping available in

nearby Cooperstown and Oneonta, despite their rural location. An overarching goal for the Kazacos was to build a home that would be a place where their children and grandchildren would always want to visit. They have two adult children: Stefan, who is a U.S. Army medical doctor attached to a Special Forces Unit, and Joe, who is a diplomatic courier for the Department of State; their two grandchildren are ages four and two.

As for the land itself, the property consists of about 65 acres of woods, a 12 acre meadow, the seven acre pond, and cleared areas for the house and out-buildings. The topography is a mix of flat land, marsh, and rolling hills. There is a shale pit on the property where they excavate stone to harden up low spots in their trail system.

The forested acreage is a typical northeast mixed hardwood forest with evidence of high grading over the years — i.e., “take the best trees and leave the rest.” The primary tree species include sugar maple, red maple, cherry, ash, hemlock, and white pine, with lesser amounts of a variety of mixed hardwoods.



*Stacey and granddaughter Lyanna enjoying the outdoors.*

In an all-too-common scenario, the area has a high deer population and the understory is relentlessly browsed, significantly discouraging forest regeneration. The property also has its fair share of invasive and/or interfering vegetation including honeysuckle, undesirable ferns, and beech.

After spending the majority of their lives in cities and suburbs, neither Stacey nor Jeannine had any background or experience with forest management, which (as many of us can surely attest) was a cause for some initial trepidation — Where to start? What to prioritize? How expensive will it be to carry out sound management practices? Where to find help we can trust? Thankfully, they soon learned of the Master Forest Owner (MFO) program, and had the good fortune to be visited by the undisputed ‘champion’ of all MFO’s (and longtime NYFOA board member) Jerry Michael, who recommended a number of initial practical steps, and introduced them to NYFOA as a source of information and camaraderie among NY woodlot owners. He went on to explain the many resources available to the private woodlot owner through Cornell, SUNY College of Environmental Science and Forestry (ESF), and others. In short order, the Kazacos became



*Joe Kazacos and a family friend fishing on the pond.*

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*Jeannine hard at work felling trees.*

members of NYFOA, and later attended the training and became MFO volunteers themselves. They also got right to work on their land.

Over the years they have undertaken the following major tasks: 1) Created a long-term forest management plan; 2) Conducted timber stand improvement (TSI) on most of the acreage; 3) Planted trees in an effort to restore a good mix of native species; 4) Worked to control

invasives; 5) Increased deer hunting on the property; 6) Built trails throughout the property; and 7) Enrolled in the 480-a tax law program.

Portions of the work, including the TSI and control of invasive/interfering plants were carried out with financial assistance from the Environmental Quality Incentive Program (EQIP), and each (including the drafting of their management plan), were overseen and/or carried out by a private



*What have we done? Stacey looking over recent TSI work.*

sector consulting forester. Both Stacey and Jeannine have been very hands-on throughout, and approach all management decisions on an equal basis. To aid with the work, they have amassed a variety of equipment and machinery, including a Kubota UTV and a 35hp tractor with loader and attachments, in addition to the standard outfit of chainsaws, chaps, helmets with eye and ear protection, steel toe boots, and a variety of hand tools.

Asked what advice they would offer to beginning woodlot owners based upon their own experiences, first on their list was undoubtedly to develop a comprehensive management plan (ideally with the assistance of a professional forester) at the outset, in order to establish priorities, and timelines for the work. Second was to take full advantage of the ample body of online resources available through NYFOA, Cornell Cooperative Extension (CCE), Cornell University, and SUNY-ESF. Third was to attend a Game of Logging safety course. Last, they suggested that tasks in the woodlot be reduced to a manageable size, in order to encourage a sense of accomplishment with small jobs done well, versus the overwhelm and discouragement of not having the time and/or resources to bring any one task to completion. In Stacey's words, "Everything about forest management takes time, often a very long time, to see results. Accepting this basic tenet has indeed taken some time to accept given that our career successes and shortcomings were measured through the prism of a short time-frame. We often find that the 'one hour job' on the property often takes all morning or more."

As for what they enjoy most about being forest owners, Stacey offered the following: "We enjoy heading out to our woods every day because it has given us a greater appreciation of nature and wildlife in our region. Our careers in the public sector involved issues and tasks that are difficult to quantify and often never fully resolved. By contrast, many projects in the woods can be completed fully so there is a more definite sense of accomplishment."

Stacey and Jeannine have been active NYFOA members since shortly after their 2013 meeting with Jerry Michael, with both serving on the steering committee of the Southern Tier chapter, and have assisted in organizing and participating in



*Jeannine splitting wood last winter.*

several chapter events. In 2014, Stacey became a NYFOA board member, serving on the advocacy committee and supporting the administration of the Restore New York Woodlands Initiative (RNYW). More recently, Stacey became the vice-president of NYFOA. Asked for his perspective on his tenures in each of these positions, Stacey offered the following: “Serving on the statewide board and our local chapter have each offered great opportunities to help shape



*Jeannine measuring trees for the NYFOA timber growing contest.*

the type of activities our members want, and to understand better the challenges of promoting NYFOA positions among state and local legislators (e.g. improving the 480-A program and obtaining financial assistance for private landowners for who implement forest management best practices). Perhaps most important we have met some really great people along the way. As vice-president of NYFOA I believe firmly in maintaining the strong peer-to-peer roots of our association. At the same time I understand that there must be a balance in how NYFOA’s limited resources are allocated between chapter and the statewide efforts – and that there is no magic formula on how best to do this. I encourage interested members to seek out board and chapter positions.”

The Kazacos have hosted a woodswalk on their property, highlighting stands which were extensively treated for invasives, and coordinated a second walk (led by a DEC forester) at the nearby Texas Schoolhouse State Forest. In addition, Stacey worked with the DEC and their town government to develop a Volunteer Stewardship Agreement to construct recreational trails at the state forest. The project has grown dramatically as they successfully added more miles of trails with interpretive signage and primitive camping options.

When asked how their membership in NYFOA has benefited them, Stacey

said that “Membership in NYFOA has significantly benefited us as woodland owners. We learned where to go for good information about woodlot management and have taken part in several seminars, training courses, woods walks, webinars, and supported NYFOA’s presence at the annual Farm Show in Syracuse. Learning about woodlot management topics and applying best practices has opened up huge, new areas of interest for both of us. Getting out in the woods regularly helps keep us fit and we stay out of trouble!”

And for parting thoughts: “There is a lot of wisdom in NYFOA’s Restore NY Woodlands initiative (RNYW). The key points are like a three-legged stool: control invasives, manage the deer population, and get sunlight to the forest floor through TSI. Do these things and regeneration will follow. Not having one of the stool legs can lead to a bad outcome. To borrow an old cliché, ‘the devil is in the details.’ These three RNYW prescriptions have guided our forest management efforts, but not without challenges and attitude adjustments along the way. Initial TSI looked pretty chaotic with trees, branches, and snags everywhere. What do you do after most of the invasives have been dispatched? The deer population seems to have increased. Current DEC stats show that there are less hunters and fewer young people interested in hunting. We have taken steps to address deer browsing, invasives, and conducted TSI on most of our wooded areas. Forest regeneration remains an overarching long term goal.”

And looking toward the future: “I would like to see NYFOA encourage younger and more diverse members to get involved in woodlot management. In short, how can the ‘old white guys’ pass the baton? As an organization, NYFOA is trying to encourage this by recognizing that the younger generation is comfortable using technology to communicate and work. They communicate differently, more often, and are far blunter than their older colleagues. The challenge for NYFOA and the ‘old guard’ is to determine how we message in a way that will resonate with our tech savvy up and comers.” 📷

*Special thanks to Stacey and Jeannine for agreeing to a last minute request to share their story. If you would like to be featured in a future member profile (or would like to nominate a member) please contact us — it is painless, and will help to inform and inspire other NYFOA members. —JJ*

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