



## Summer 2023 Vol. 41 No. 2

A PUBLICATION OF THE CATSKILL FOREST ASSOCIATION, INC.



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#### CONTACT

Catskill Forest Association, Inc. 43469 State Highway 28 / PO Box 336, Arkville, NY 12406 Phone: (845) 586-3054 / Fax: (845) 586-4071 cfa@catskillforest.org / www.catskillforest.org

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#### From the President's Desk - Summer 2023 By: Mike Porter - Board President

Welcome to Summer. I am reprinting an old letter I wrote during Covid time as I have been unavailable to do anything new for a month or so. In going through my old writings, I found this to be as appropriate a subject as any at this time of year. We must determine a plan for our open fields to prepare for future succession. Do realize that time WILL alter any of our property unless we take steps, sometimes drastic, to slow succession. The principles discussed in this article are as valuable to your forest land as to your open land. You can simply consider the "time marches on" idea of succession and having to control its rate of advance on your property.

Today, I would like to take some time and discuss a condition in our region that has me very concerned. When I was young and farms proliferated, there was always someone cutting their hay or turning out their cows to a field not being mowed for the year. It usually started with mid-June cutting and harvesting of baled hay for farmers. There were, sometimes, 1 or 2 more mowing's for late season hay. As there were always fields left to grow for a year or two, there was always habitat for open-field species of wildlife.

Today, with farms disappearing at alarming rates, there is a shortage of open-field environments available to the wildlife we have grown to expect and love. Nearly missing from our community of wildlife are many sparrows, the Eastern Meadowlark, the Bobolink and other field nesters, shelter seekers and feeders. This is an alarming trend across the country as open fields are rarer and what they are used excessively for cultivation. There are methods available to landowners who relish the biodiversity that open fields offer to their property. These possible methods have varying degrees of effectiveness and may or may not be suited to your own personal plan for your property.

Let me expound on the possibilities and the benefits and drawbacks of a few. First, you cannot mow your open fields at all. Simply try this for a period of 5 or more years and you will find you have a rapidly developing forest of shade intolerant trees and shrubs that displace the grasses that are so desirable. Remember that if we want reforestation in a temperate, humid climate like ours, we simply must do nothing. It will occur on its own without our doing anything, we will add to the increasing forest cover of the Catskills. Not good.

Second, we could adopt a plan where we cut our open fields once every 3 years after late July when we will be finding some small woody plants and larger coarser vegetative plants showing up. These plants can be good habitat for open land species but if left too long become the increased forest cover we are trying to stabilize. This method will be somewhat less costly than yearly cutting and yield better wildlife opportunities. It will mean that your open land will appear somewhat shaggy for extended periods of time. If you like things neat and tidy, this might not be good for you even though it is great for wildlife. You must make a choice.

Thirdly, you could adopt a yearly cutting regimen where each year you shear your fields and let the cut grasses lay, fertilizing and creating habitat for insects and small mammals and birds. For many people, this might be the most appealing with one exception, if you cut too early in the season, you will disrupt or possibly destroy the reproductive cycles of many species. A general rule of thumb should be to wait until the middle of August or later to cut the fields. This will give ample time for your wildlife targets to raise their families and safely get out of the way of the mowing machines. This method will also eliminate the presence of woody plants and some large herbaceous ones, keeping your field growing in grasses. With this method, you usually will have to pay someone with a bush hog to do your cutting.

Another variation of the yearly cutting could be offering your fields to a local farmer to cut for hay. The only way this variation will benefit wildlife is if you reach an agreement that any cutting be done after mid-August to allow for the above-mentioned wildlife to successfully rear their families. Today many farmers have adopted the harvest methodology of cutting early and often take advantage of the quality of the hay in the early season. This method, unfortunately, is one of the main culprits in the downfall of wildlife success in open fields in the region. Beneficial to the farmer in more highly nutritious hay, deleterious to the wildlife that proliferate in open fields. The only way this method can work and that farmers can help wildlife is if they are willing to sacrifice the early season hay in favor of a drier, less nutritious harvest. Some will agree because they understand, others might not. You must sort out the ones who will from the ones who will not live by your wishes.

Whatever you choose, make sure it fits with your plan for your land. Wildlife habitat enhancement is huge among CFA members in a past survey. This action will create a viable, safe habitat for the indeterminate future. In other words, it will keep giving as long as you keep properly cutting.





#### The Cost of Doing Nothing – Preservation vs. Conservation

By: Ryan Trapani, Director of Forest Services

We often hear about "disturbances" or "impacts" to the forest. Disturbances from wind, insects, fungi, or wildfire. But where is prescribed fire or deliberate fire? Forestry or forest management? Where are the things that humans can do themselves, for the forest? Instead, climate change seems to suck up all the oxygen being exhaled from these trees. We hear plenty about the negative impacts climate change is causing on forests, but what about its mis-management? Or the total lack thereof? Instead, we might find that disturbances (i.e. wind, insects, fungi, wildfire) can only achieve "brownie points" if divorced from human beings; If they are "natural." Whether it's fire, cutting, or climate change, these disturbances seem to get more attention when humans are the cause.

#### Preservation

The debate about humans in the "environment" and their role isn't new; Conservationists and Preservationists have been at it for almost 100 years. Preservationists long for Nature without humans. Where or when did this all begin? Pre-colonial forests weren't absent of man, but instead the romantic view of the "noble savage" made famous by 18th Century French philosopher Jean Jacques Rousseau, among others. The "noble savage" was an "idealized concept of uncivilized man, who symbolized the innate goodness of one not exposed to the corrupting influences of civilization." The 19th Century Naturalists and 20th Century Environmentalists would take it one step further. According to Author Robert Nelson (The New Holy Wars: Economic Religion vs. Environmental Religion in Contemporary America), Environmentalists in the 19th century borrowed from their Christian beliefs within their new "Natural" ones. The absence of man in the environment sort of represented the goal; A heaven on earth. The more man, the more "contaminated" Nature was. Famous Naturalist - John Muir and son of a Presbyterian Minister - was the "Father of the National Parks" and proponent of the Preservation Movement. Muir - like many Naturalists of his time

and beyond – believed that the total absence of man in "wilderness" represented a sort of heaven. It isn't difficult to trace back Muir's beliefs to his Christian teachings his father apparently made him memorize. The humans – or rather Adam and Eve – had picked the apple and contaminated the purity of their environment:

"Cursed is the ground because of you; through painful toil you will eat food from it all the days of your life. 18 It will produce thorns and thistles for you, and you will eat the plants of the field. 19 By the sweat of your brow you will eat your food until you return to the ground, since from it you were taken; for dust you are and to dust you will return."

To cleanse himself, Muir had to visit his new church in the mountains, in the absence of man. Local Catskills Naturalist – and my personal favorite – John Burroughs, also sought the purity of "wilderness" atop Slide Mountain where a plaque dedicated to him reads, "Here the works of man dwindle' in the heart of the southern Catskills." Although Burroughs wasn't nearly as regimented in man's absence as Muir; He spoke kindly of barns, cows, and the domestic honeybee or the common songbird, while at the same time treasuring "wild" places. I too value both.

The romanticism of Rousseau for the "noble savage" to Muir's obsession with wilderness in part is what led to the manifestation of these ideals into law when NYS wrote into its state's Constitution, the "Forever Wild Clause." Another example would be NYC's taking of the "wilderness water" in the Catskills far from its borders, instead of filtering or desalinating the nearby Hudson River as New Orleans did with the Mississippi River.

#### Conservation

But Muir wasn't alone in his competition for winning the American psyche. There was the "Father of Forestry" Gifford Pinchot who believed in Conservation. In short, Conservation can be defined as "wise use." According to the USDA Forest Service, "Gifford Pinchot said that where conflicting interests must be reconciled, the question shall always be answered from the standpoint of the greatest good of the greatest number in the long run." Where Preservation's goals are to exclude humans, Conservation admits – at least more so – that they have a role to play; Humans can be a part of Nature. However, I think Muir and the Preservationists won the culture battle. I would bet that more know the name of John Muir than Gifford Pinchot. It seems many of the environmental groups and their philosophy mimic Muir's ethos. Just the fact that New York State codified into law the highly romantic and urban construct of "wilderness" and that the US Department of Interior's National Parks followed aids this argument well. In my own experience, few can decipher the difference between "Conservation" and "Preservation" today, which is understandable, but problematic.

I cannot say that the Preservation Movement was all bad or that the Conservation Movement was all good or vice versa. In context, the Preservation Movement seemed to have been catapulted by a nation undergoing economic growing pains; A nation that had to reach peak agricultural development before industrial development, which led to today's technological explosion. By the late 19th century, most forests had been cleared and it made sense to want to "protect" or "preserve" what little was left. What the Preservationists failed to consider or envision, was technological innovation that would later translate into far more Americans in population feeding off far less farmland, and the forest regrowth and fauna that would follow due to innovation; The forest resurgence phenomenon is sorely under-rated today. Not even Thoreau or Burroughs could imagine the resurgence of wildlife in the eastern US. Their pessimism – like many Environmentalists – had failed to manifest due to their lack of "rational optimism" for human adaptation, as Author Matt Ridley argues in his book, "The Rational Optimist: How Prosperity Evolves." Nature too, is more adaptive than we like to credit her with. The eastern coyote, white-tailed deer, and black bear are just a few examples of Nature's adaptive traits.

#### The Battle Rages on Today

Yet the battle between these two paradigms continues. It's like the western antelope. Even though the ancient North American

cheetah had been extirpated a long time ago, the antelope runs today as if one were chasing it in real time. Environmentalism successfully adapted to the 19th and 18th Centuries but failed to adapt to the 21st. I believe it will require a concerted effort - this time - by Conservationists to welcome back man into the Garden. Take for example the American chestnut. Many of us are aware of the chestnut blight which was unfortunately brought to North America and accidentally killed off this great tree. What many aren't aware of are the innovative efforts to bring it back through genetic modification. Now, genetic modification isn't nearly as controversial in the agricultural world. But agriculture doesn't fall within the purview of "wilderness" or Preservation. It is already "contaminated." But bringing genetics into Forestry or the woods is another matter, and once again raises the ire of the Preservationists. It is true. No one wants to see unintended negative consequences from introducing a gene to the forest. But the costs and benefits - or rather "reconciliation" - of stalling the introduction of transgenic chestnuts into the woods must be weighed. We have lost out on all that potential growth! Imagine if agricultural innovation had been stalled in the early 20th Century by the same people? We would not have much of the forest regrowth we enjoy presently since agriculture is implemented today on far less land than it used to be. We may have also starved to death as many apocalyptic academics - thankfully - had falsely predicted. But they failed to predict innovation by humans and Nature.

And so, we arrive finally at climate change. Many also agree that climate can negatively impact the forest. However, the contention lies behind "who" is responsible for it. Is it natural? Is it man? If man, then how much and what is the appropriate mitigation? What are the intended and unintended impacts of each mitigation? This is where the old battle resumes. This is the nuance that the major media outlets seem to miss. The debate is centered all on what humans are "doing" to the environment and how they can be stopped. What is missing is what humans are "not doing." One of the main bones of contention or rather its roots – within Environmentalism – is that the climate cannot change by man at all. Any change – by man – is unacceptable, since this would again go against the Environmentalist ethos. Instead, the climate – like land-usage before settlers, or even better in the total absence of humans altogether – should return to some pure state or time. This is impossible. But, if climate change is as bad as other forest issues of the past, then allowing humans to innovate will be our true savior. Fighting 21st Century problems with 21st Century technology; like Conservation through transgenic chestnuts, not sitting on our hands.

#### Forestry & Conservation

If you haven't figured it out by now, the field of Forestry is rooted in the latter - Conservation. We believe in you, as a friend of the forest to make improvement. Since Conservation lost the culture war, humans are ignorant of their positive potential. But just because something isn't popular, doesn't make it wrong. This is what science is all about. It is a methodology that admits fallibility; It is not a religion, nor a popularity contest. If results can be replicated, then it doesn't matter whether it has been published in a peer-reviewed journal or how many people agree; It must show its work and follow the scientific methodology. I would encourage members to listen to our From the Forest radio show with USDA's Brice Hanberry -"How is Fire Ecology Different than Classical Ecology" among others. In this show, Brice outlines how the lack of forest management since the 1940s – in this case prescribed burning – has damaged our forests far more than climate change. According to Brice, our climate has not yet changed enough outside historical limits to cause significant harm to trees. In other words, maple and oak have been through worse. What we aren't hearing about is the positive role humans have played in our forest and could today too. This directly goes against the Preservation ethic that kicks out humans all together.

For the last 100 or so years, the public has been bombarded on how humans have damaged forests and contaminated the "Garden of Eden." What has not been discussed are the "costs of doing nothing." For example, the great densification of the eastern US's forests, leaving them more susceptible to insects and disease. Or the monopolization – or "mesophication" as PSU's Marc Abrams calls it – of forests by shade-tolerant plants at the expense of sun-loving fruit and nut trees or younger plants for quality wildlife habitat and biodiversity. Case in point would be pollinators. Are they disappearing more from what humans are doing (i.e. chemicals), or are they disappearing from what humans are not doing (maturing forests which cause fewer young flowering plants)? Maybe both, but have you heard about the latter example? When it comes to birds - according to Audubon - it's about the lack of young forest that's leading to many species decline. Audubon is now cutting, a lot, to turn back the clock. Not to mention the loss of the timber industry making good forest management far more difficult and costly for forest owners to meet their wide variety of goals. Instead, the public hears about climate and how bad humans are, and nothing about the negative consequences of humans as tourists or by-standers in a forested museum; This mismanagement often outweighs any climate change and can be shown today to you in the forest, right now. The evidence that cultural influences outweigh climate can be evidenced by talking to Foresters that have been inventorying trees and making management plans for decades upon decades; The data is there. It takes work; It takes "Conservation" or wise use to fix these problems. A museum protected by a blue line won't suffice in the 21st Century.

## FOREST FARMING

### Introducing CFA's new Program!

FALL - SPRING

Want to improve forest health, manage your forest sustainably, grow food and medicine, and make money from your land?

Agroforestry is a land management practice that intentionally combines livestock and/or crops with trees into one integrated system.

A non-timber forest product (NTFP) is any product made from a forest setting, excluding timber. Some common examples include maple syrup, tree fruits and nuts, mushrooms, and wild edible plants such as ginseng or ramps.

Forest farming is an agroforestry practice which involves the cultivation of NTFPs under an existing forest canopy. This includes maple syrup production, ginseng cultivation, growing edible mushrooms, silvopasture, tree fruit production, and more!

The purpose of CFA's Forest Farming Program is to provide educational, field-based services of agroforestry practices to landowners at the backyard scale, and to incentivize forest management through non-timber forest products where timber harvesting is not feasible. Experience hands-on education at your property for:



Backyard Maple Syrup Production (Jan – March)

CFA will provide backyard-scale tapping services on site along with educational instruction on identifying and tapping maple trees, materials for tapping and sap collection, and a guide to maple syrup production.

Tap up to 3 trees with materials provided by CFA, and have additional

maple trees marked to tap on your own in future years!

#### Shiitake Mushroom Log Inoculation (January – April)

Receive felling, bucking, and inoculation services on site along with educational instruction on selecting trees for inoculation, incorporating mushroom log harvest into forest management, inoculating and growing shiitake mushrooms, and caring for your mushroom logs.



Inoculate up to 5 logs with materials provided by CFA, and enjoy delicious

shiitakes grown right in your own backyard.



#### Wild-Simulated Ginseng Cultivation (October – November)

Learn how to establish small wildsimulated plots of ginseng in your forest, plus educational instruction on monitoring & caring for your ginseng plants, harvesting, and processing. Install 3-4 plots of ginseng with materials provided by CFA and reap the benefits for years to come.

For more information on how you can farm your forest, contact CFA's Education Forester Zahra Bellucci at zahra@catskillforest.org or give us a call at (845)586-3054.

#### The Complex Life of Trees By: Zahra Bellucci, Education Forester

It's time to burst a bubble. There is no scientific evidence to suggest that trees have thoughts, emotions, and values, intentionally share resources to care for other nearby trees, nurture their offspring as a human mother nurtures her baby, or care for their sick and old.

As someone who works in the forest, I have often been recommended books by landowners that imply these beliefs—that trees in forests operate just like Utopian human communities—and often are the basis from which landowners decide what they are or aren't willing to do in terms of forest management activities. Although I could understand the appeal of wanting these ideas to be true, many of them seemed to go against core concepts that I had not only learned while studying forestry in school, but have directly observed in the field. As a forester, it seemed important for me to investigate these claims for myself.

#### Culture vs. Science

I'll start by providing you with a direct quote from the book most commonly recommended to me by new landowners—Peter Wohlleben's book *The Hidden Life of Trees*<sup>1</sup>. On page 4 of the book, Wohlleben writes:

"Every tree, therefore, is valuable to the community and worth keeping around for as long as possible. And that is why even sick individuals are supported and nourished until they recover. Next time, perhaps it will be the other way round, and the supporting tree might be the one in need of assistance. When thick silver-gray beeches behave like this, they remind me of a herd of elephants. Like the herd, they, too, look after their own, and they help their sick and weak back up onto their feet. They are even reluctant to abandon their dead."

In this quote, the author attempts to evoke heartfelt imagery of trees as noble beings living in perfect harmony, helping each other in times of need and feeling love towards one another. It seems to come from a form of respect or reverence for nature—yet, to me, these two sentiments are contradictory. He uses language like "reluctant" and "abandon" to imply that trees experience human emotions. This is also amplified in Dr. Suzanne Simard's book *Finding the Moth*- *er Tree*<sup>2</sup>, where the author claims to have discovered maternal instincts in trees, despite there being little to no definitive evidence for this—studies that Simard has been involved in herself show a limited view into a specific type of forest<sup>3</sup>, with findings too preliminary to apply as ubiquitous in all forest types or mycorrhizal interactions. This anthropomorphization of trees rejects any ideas that trees may have *different* experiences than human beings, or that there might be some way to experience life that doesn't include emotions, values, and morals in the way that humans define them.

Some argue that it's a good thing to anthropomorphize non-human life forms in order to increase our ability to empathize with them—the more humans empathize with other life forms, no matter how that empathy is generated, the better support and success conservation efforts receive. When Suzanne Simard uses the term "mother" in reference to a tree, our heart strings are pulled how could anyone want to cut down a "mother tree"? Yet, there's a deeper question to ask ourselves: why do we need other life forms to be human-like in order to value them as important parts of our world? Are we truly showing reverence for trees by projecting our own experiences onto them? I don't believe we should need to feel like trees experience human emotions in order to manage our forests sustainably.

There is undoubtedly a useful time and place in culture to tell stories about the natural world in order to promote certain values or to explain certain phenomena in accessible ways, such as to teach children—there are countless examples of myths and stories in many cultures involving nature—yet there can be a point where these stories obscure our ability to see reality. In other words, they can morph into outright lies that we unknowingly propagate in a game of pseudoscientific telephone. Cultural stories that cross this boundary often create detrimental belief systems that can be extremely difficult to shake once they take hold.

There are many examples of these beliefs. The fact that trees emit certain pheromones or chemical signals in response to attacks from insects and disease is often cited as proof that trees are intentionally communicating with their neighbors, compassionately warning other trees of danger. However, this can also be explained by the fact that emitting signals via air is a faster way for a tree to warn its own outer branches of an attack rather than sending the signal internally. So, if trees are sending chemical signals through the air to signal danger to their own outer limbs, how do we know that they also have intent to warn neighboring trees? And that, in this process, other trees haven't just evolved to pick up on this signal and put their own defense systems into action to improve their chances of survival?

The answer is that we don't know. It seems that this is one of the points at which this story becomes a lie. Rather than admitting this claim to be a speculation, or simply an exercise in imagination rather than based in any factual evidence, it is presented in books like those mentioned above as a given truth.

One of the most common examples I hear is about the supposed egalitarian tendencies of trees—a story about how trees will politely grow away from each other in order to not impede on the growing space of a "friend", so that they may both benefit from an equal amount of resources. It's a lovely sentiment to imagine trees experiencing friendship and consideration for one another, being courteous only to take up the space they need. Yet this leaves out one of the most significant factors of forest ecology—shade tolerance.

#### Light Governs All

Sunlight is the most important resource that trees are after, even before any water or micro-nutrients in the soil; without sunlight, they are unable to photosynthesize and produce the sugars they need to feed themselves. In general, trees will not put precious energy into growing branches where light is not available. If the branches of other trees are already present in part of the forest canopy, it doesn't make sense for another tree nearby to waste its energy growing in the same direction where light is limited. I have often seen trees growing straight through another's crown in order to reach the light. Furthermore, it is widely known that certain trees are a lot more tolerant of shade than others. Shade tolerance is often one of the most heavily weighted considerations when planning forest management activities—just like any other activity that involves tending to plants.



Gaps in the canopy can increase species diversity by allowing shade-intolerant species to thrive.

Trees that are intolerant of shade are easily out-competed by shade tolerant trees. Maples, beeches, yellow birches, and hemlocks are all shade-tolerant Northern Hardwoods that, given time, will out-compete oaks, hickories, and cherries every time. In the same way a gardener would not choose to plant a shade intolerant shrub underneath the crown of a large tree, or wouldn't expose a shade-loving plant to the scorching hot sun in the middle of their yard—a good forester is mindful to tend the forest in ways that will benefit the needs of different tree species. At times, this means leaving parts of a forest undisturbed, and at other times, it means thinning the forest canopy to redistribute light across the forest floor.

Let's return to *The Hidden Life of Trees* for a moment. Although I don't intend to target one specific author or book, it feels particularly important to point out this claim since it has the power to directly influence the management decisions of landowners. Wohlleben challenges the idea of thinning by discussing beech trees and their tendency to grow closer together, apparently for the purpose of sharing resources amongst each other which can be disrupted if they are thinned out. On page 16, he states:

"[...] it is not possible for the [beech] trees to grow too close to each other. Quite the opposite. Huddling together is desirable and the trunks are often spaced no more than 3 feet apart. Because of this, the crowns remain small and cramped, and even many foresters believe this is not good for the trees. Therefore, the trees are spaced out through felling, meaning that supposedly excess trees are removed. However, colleagues from Lübeck in northern Germany have discovered that a beech forest is more productive when the trees are packed together. A clear annual increase in biomass, above all wood, is proof of the health of the forest throng." Reading this, a landowner may be easily convinced that silvicultural practices like thinning are in fact detrimental to the forest, and are only done in the interest of producing timber. Contrary to ideas spread through popular media, books, and opinion articles galore—many foresters have motivations far beyond timber production to manage forests responsibly and sustainably, and recognize forests as an integral part of our Earth's ecosystem.

Motivations aside, and despite this claim being based in unpublished (and therefore non-peer-reviewed) research, it also ignores several important characteristics specific to beech—including, again, shade tolerance. Beeches are one of the most shade tolerant tree species around.



They thrive in shady conditions and have adapted to being browsed by animals by becoming prolific root suckerers, forming dense beech thickets from the roots of a single established tree. Cutting down a single beech tree can result in hundreds of root suckers popping up from the roots of that tree. Many of these root suckers can grow into full-size trees, leading an observer to believe that they are growing independent of one another. Foresters have been aware of this for decades. A tree is not "sharing" its resources if, in fact, what seems like individual trees is actually just shoots from one single tree. It's a single organism distributing resources out over its own structure. In addition, very few tree species have the ability to root sucker in the way that beech can. It's unlikely you would find other trees exhibiting this same supposed "resource-sharing" behavior unless it were occurring by other means in the soil.

#### The Wood Wide Web

This brings me to another story that is beginning to teeter on falsehoods—the role of common mycorrhizal networks in forests. 20

For those unfamiliar, "myco-" means fungi, and "-rrhizal" means of the root. This term is used to refer to the subsoil network of mycelium which grows among the roots of plants and trees, and is said to connect the forest together underground in a "wood wide web". Of course, there is some scientific evidence that resource transfer occurs in this way via mycorrhizal networks—but it's important not to jump to conclusions beyond what we have been able to show and replicate in science, and even more important not to turn these preliminary findings into narratives that project human qualities onto trees and fungi. Research on mycorrhizal networks and resource transfer between trees within these networks is still in its preliminary stages. The "how" and "why" of this process is still largely unknown. To assume that we know close to anything complete about the true function of mycorrhizal networks-and also to not acknowledge that there are likely thousands of functions that these networks perform given their complexity—seems arrogant to me.



Artistic rendition of a mycorrhizal relationship by scientific illustrator Angela Mele

A majority of the studies conducted on common mycorrhizal networks amongst trees have been in greenhouse nursery settings—or in other words, in pots which do not at all resemble the ecology of forest trees. In addition, these trees are typically seedlings or saplings—smaller, younger trees that also do not accurately represent mature forest trees. Studying subsoil networks of any kind, especially of mycelium, is extremely difficult to pull off in-situ. As you can imagine, directly observing these networks in the soil using the technology available to us today almost always requires a disturbance of the soil, and thus, destruction of a portion of the network. Compromising the network obviously poses many additional obstacles to consider when conducting a study, and potentially alters the results to a point that renders them unreliable. Since this is so risky, it's much easier for scientists to attempt to construct artificial situations where tree seedlings in a controlled setting are manipulated using artificial barriers such as mesh screens in the soil where mycelium can't penetrate<sup>4</sup>.

Yet even with these methods, there are issues. Artificial barriers also potentially interfere with flow of nutrients through the soil medium—an important pathway through which trees get water and various nutrients. If tree roots are cut off from the mycorrhizae using these barriers, yet the barriers additionally impede the ability of nutrients to move through the soil or for tree roots to forage freely, then it would be impossible to tell which factor would've caused a decline in the tree's health. As scientists Justine Karst, Melanie Jones, and Jason Hoeksema put it in their recent article reviewing the scientific literature on common mycorrhizal networks5, "Mature trees are not large seedlings, and forests may have emergent properties." In this same article, in a section concerning the claim that resource transfer within common mycorrhizal networks (CMNs) increases the performance of tree seedlings, Karst, Jones, and Hoeksema write:

"Implicit in this view, and captured in this popular claim, is that fungi forming CMNs are physical extensions of roots (that is, passive conduits in which the direction of resource flow is determined by plants). This view conflicts with fungal behaviors involving purpose and intent and overlooks that mycorrhizal fungi do not always benefit their plant partners. [...] for every study interpreting CMNs as mediating interplant resource transfer or benefiting seedling performance, the results can be explained without invoking CMNs."

This is what I mean by the research being in its preliminary stage—in order for an observation to be accepted as significant, it must be thoroughly vetted, investigated, and most importantly, reliably replicated. All other possibilities or explanations for a given observation have to be explored and systematically ruled out before a conclusion can be made. This is simply the scientific method. Certainly, these early stage findings are exciting, and possibly hint at a 22 whole world of possibilities within the forest that we have yet to discover. But it would be a shame to close the door on discovering what truly is going on for a narrative that simply got carried away much too soon.

#### Leaving the Bubble

A cultural story of trees following Utopian human values of equality and community has been invented as a result of these premature claims, and is indeed a highly appealing story—painting an image of a magically balanced world in nature which we humans long to connect with and mimic in our own version of society. There's no confusion about why a story like this would anchor itself into the hearts and minds of many, or why so many of us would long for it to be true, despite the fact that it may not be. I've written this article not to be cynical or to submit a hostile criticism of these stories, but as a reminder to remain ever-curious about the bubbles we might be surrounded by in our lives. I would encourage all reading to dive into the literature for themselves with questions at the ready. We are not served by bubbles—only shielded from a reality that we all have a responsibility to perpetually uncover.

References

1. Wohlleben, P. *The Hidden Life of Trees: What They Feel, How They Communicate—Discoveries From a Secret World Vol. 1* (Greystone Books, 2016).

<sup>2.</sup> Simard, S.W. *Finding the Mother Tree: Discovering the Wisdom of the Forest* (Knopf Doubleday Publishing Group, 2022).

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### Bastbark – Bastwood – Basswood

By: Dr. Michael Kudish - Forest Historian

A colleague of mine just named his daughter Tilia Mae, after the scientific name for his favorite tree. That reminds me that I've never written an article on basswood.

THE NAME: American foresters call the tree basswood. Europeans call their species lindens. The scientific name for our Catskills basswood is *Tilia americana*.

The common name is a corruption of bastbark. Bast is bark fiber, not wood fiber. Native Americans used basswood bark for making rope. Bastbark was altered to bastwood. Then bastwood became basswood. The name has nothing to do with fish or with the largest member of the violin family.

#### SITE AND DISTRIBUTION:

Basswood is a minor component of the northern hardwoods forest: sugar maple, red maple, beech, black cherry, and yellow birch. Unlike these five dominants which can grow in abundance and form groves, basswood usually occurs as isolated or scattered trees. Rarely does one see two or more close together.

Basswood is the most demanding species, growing only on the best sites. It prefers moist soils – not too wet, not too dry - requiring at least as much water as sugar maple and white ash with which it is most often found. It commonly, but not always, grows around seeps and springs and in coves. It cannot tolerate too much standing water as in swamps and fens. It can neither tolerate high-elevation ridgelines where soils too thin and stony cannot hold enough water; here, on these more drought-prone sites, ridge hardwoods - red maple, yellow birch, beech, and black cherry - predominate.

Basswood requires soils rich in mineral nutrients, and in return, enriches the soils further when its leaves and other litter decompose in the fall.

Therefore, basswood is confined to valleys and lower and middle slopes, most often below 2500 feet elevation. It is widely distributed in the Catskills. The maximum elevation I've ever found basswood is at 2900 feet along the snowmobile trail south of the col between Kaaterskill High Peak and Round Top; it is in a seep that forms the head of a brook. The next highest I've seen it at is at 2745 feet along the trail between Meads and the summit of Overlook Mountain. The 3rd is in Gill Gully, on the southwest slopes of Belleayre Mountain, at about 2600 feet. Have you found higher elevations for this species?

#### **IDENTIFICATION:**

Consult any good tree identification book to recognize basswood. It would be superfluous if I were to describe it here. But I would like to add some comments about a few of its features:

First, it has three very different types of leaves. The usual foliage leaves are large and nearly circular, often up to 8 or 10 inches across.

The two cotyledons (the first leaves that emerge from a germinating seed) on the forest floor look like tiny, green human hands with five fingers, about an inch across. They're not common, so you won't see them every time you are in the woods.

The fruit is a hard, dry capsule, about the size and shape of a green pea, but turns tan in the fall. Several of these capsules are attached to special leaf, called a sail leaf, that facilitates their dispersal by wind. The sail leaf looks nothing like the foliage leaves or the cotyledons; it is long and narrow, more like a willow leaf.

Second, basswood often sprouts, so you will frequently see multiple-trunk trees, or a single trunk with a ring of young stems encircling it.

Third, the bark is somewhere between that of white ash and sugar maple. It is not as regularly ridged and furrowed as the ash, but more so than the maple.

Fourth, basswoods can attain fairly large size. At the Natural History Preserve in Stamford, NY, we have a basswood 35 inches in diameter and another 28 inches. I estimate their age, by partial ring counts on fallen limbs, as about 90 years, but I suspect they can attain ages greater than that.

#### USES:

You can often smell and hear a basswood when it's in flower in

late spring! No, you don't hear the tree itself, but you do hear the myriads of insects buzzing about and pollinating it. The flowers smell sweet and are produced in large numbers. If you keep bees, basswood is a good honey tree.

The buds are edible and taste like green peas.

The wood is soft and light weight. It is used, for example, for novelty toys, items. crates, boxes, drawers, chair stock for veneer, window sashes, picture frames, musical instruments, yardsticks, and comb honey.

#### CODA:

Let me close with something that I chuckle at. Tilia Mae is not the only botanical name recently adopted by my colleagues for their children. I also like the novelty of Lucy Aralia, Alder, Iris Fen, and Magnolia.





#### Loving Trees to Death By: Ryan Trapani, Director of Forest Services

The other day I watched my oldest daughter-Metta Maeride her bicycle back and forth on our small driveway. I opened the house window and yelled to her, "Why don't you ride that thing down the road." She asked back, "I can ride on the road"? "Go ahead," I said. I could tell she had some hesitation, but it quickly dissipated and was overcome by a sense of freedom and exhilaration. I must admit that I had my concerns. What if she falls? What about cars? Abduction? Etc. Everything bad comes to mind. It is difficult to "release" your kids from your orb, but I believe it is necessary for their growth. Too much supervision, and their light is smothered. I still have my concerns, of course. But the other day, I was climbing my neighbor's hickory tree again to gain a view of the mountain and heard singing coming from the road. I looked down and could see her riding a bike downhill, singing like no one was watching her. It reminded me of how happy I was to ride my bike as a kid; To be in your own world and just happy to feel free.

#### Know Thy Trees & their "Freedom" Index

The same is true - in some sense - with trees. They too strive to be free and certainly thrive when they are. Freedom for a tree isn't necessarily living with fewer taxes, zoning ordinances, or bills of rights. In a tree's world, freedom is often about reaching for sunlight. In this sense, some trees want to be freer than others, just as some humans do I suppose. Take black cherry for instance. That tree will focus most of its energy in snaking its way between neighboring tree crowns in search of more sunlight. Gray and white birch are even less tolerant of sun-stifling and will bend far to get it. On the other end of the spectrum is eastern hemlock, which tends to grow straight in shadier conditions. Its indifference to the sun is counterbalanced by its tremendous patience. It simply waits for trees above it to die off. Most other trees would have died long ago waiting this long, but not ole hemlock. Oak is a moderate on the freedom index and is somewhere between cherry and hemlock. It can take a little shade when younger, but eventually needs more light to thrive; Otherwise, it dies

back or is eaten by hungry deer.

Of course, I'm anthropomorphizing a little bit here, but in jest to make a point. And the point is to first know your trees. Second, to know their freedom index, or shade tolerance. Some trees must be "released" more from the shade of their neighbors. This simple understanding is probably one of the most underrated aspects of basic forest and tree management in eastern North America. Instead, humans are coddling or loving their trees to death. "I don't want to cut one tree down," is commonly stated. "The more the better," says another. "Let Nature takes its course." Although well-intentioned as these notions may be, they often lead to unintended consequences. Consequences of over coddling are often (1) Densely packed, sickly trees; or (2) The default increase for shade tolerant trees at the exclusion of "freedom loving" trees over time.

#### Densification & Mesophication

First, let's deal with the first one – Densification that leads to sick or dead trees. Often, Foresters and Arborists are called out to assess a sick or dead tree in one's forest or near the home. It is commonly assumed that the tree is or was killed off by something biological – i.e. insect borers or saprophytic fungi. These "pests" are often secondary and instead finished off the tree. The primary stressor or cause that contributed to the tree's demise is often too much density or shade. Remember, a tree creates carbohydrates or "food" by combining three ingredients: sunlight, water, and carbon dioxide. If it doesn't get it, it will suffer, be less vigorous, and less able to ward away attacks. Therefore, it is really about quality, and not quantity of trees. This can be difficult for those that wish to love every tree. The "densification" of eastern forests is a real thing that has made our forests more susceptible to pests, exotic species, changes in weather, etc.

The second has been discussed a lot in past articles and is often referred to as "mesophication." Doing nothing is just dandy if you're managing for plants or trees that can take some shade. Sugar and red maple, for instance, aren't as fussy about spreading their limbs far

and wide. But fruit and nut trees that are often important to humans and wildlife is another story; They need more sunlight. Oaks like their freedom and want to spread those limbs. Mulberry, apple, and cherry prefer more sunlight. The absenteeism of humans in the eastern forest in the last 100 years has led to the slow decline in these "freedom-loving" trees, or "mesophication." Mesophication refers to forests gradually stocked primarily with shade-tolerant or "disturbance-intolerant" plants or trees. Maple trees are great, but red maple is New York's most popular tree, and having them is at the expense of other beneficial plants. Just know that by "preserving" some trees, you are disregarding or perhaps saying goodbye to others more important to your goals or other flora and fauna.

In summary, know thy trees. Learn their names and what they look like. Second, learn which ones require more sunlight. Most trees like more light, but it isn't always about what a tree wants that makes it successful, but instead what it can tolerate, like shade. If you know which ones cannot tolerate being close to others and wish to preserve them, then you might have to do some work and "release" them. Call CFA to assess your trees, help ID them, and tend to their future.







# Business Mem



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White Feather Farm dallas@whitefeatherfarm.org



## Upcoming Events ...

Tree ID Walk July 8th

> Forest History Walk July 15th

Game of Logging Level 1 July 22nd

> Structural Tree Pruning July 29th

Game of Logging Level 1 August 12th

> Ginseng Forest Hike August 19th

Tree Planting Demonstration September 9th

> Game of Logging Level 2 September 16th

### Programs & Services

Learnmoreatcatk/Ilforestory/programs

Program	Description	<u>Time</u>
Consultations	One-hour property visits by field staff to help you learn about what your property holds	All Year
Apple Tree Pruning	Pruning helps keep apple trees healthy and improves quality and quantity of yields	Jan March
Apple Tree Grafting	A horticultural technique to help bring old, neglected trees back to fruition	April - May
Forest Bird Program	High-Nesting Bird Boxes for ducks, owls, etc. And/or Canopy Bird Feeders that protect against squirrels & bears	All Year
Forest Framing	Want to improve forest health, manage your forest sustainably, grow food/medicine, and make money from your land?	Fall - Spring
Invasive Species Management	Care for trees against invasive insects, and care for forests against invasive plants	May - Sept.
Portable Sawmill Program	We bring a state-of-the-art portable sawmill directly to your property and mill your logs to lumber, on the spot	Spring - Fall
Property Mapping	Custom property maps highlighting the property features you want to see	All Year
Tree Care: Cabling	Preserving large-sized individual trees with structural defects.	Spring - Fall
Tree Care: Structural Pruning	Establish dominate leader for tree structure.	Spring - Fall
Legacy Tree	CFA will advise on and plant a long-lived heritage tree on the landscape	Spring - Fall
Wildlife Habitat Management	Forestry practices to help improve your woodlot for wildlife	All Year





#### MEMBERSHIP APPLICATION

Become a member at www.catskillforest.org/membership or send a check/cash with this application to: Catskill Forest Association, Inc. PO Box 336, Arkville, NY 12406.

NAME:			
MAILING ADDRESS:			
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PHONE:	EMAIL:		
TOTAL ACRES: FORES	STED ACRES: POI	ND[] STREAM[]	RIVER [ ]
CATEGORIES (PL	LEASE CIRCLE)	ADDITIONAL DO	NATIONS
BASIC (\$75)	CONTRIBUTING (\$175)	GENERAL	
Events free or discounted;		OPERATING FUND \$	
CFA News Subscription; CFA Member Property Sign; Access to CFA Programs	SAME AS BASIC + 10% Discount on Services;		
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