"This institution is an equal opportunity provider."

Partners News

OCTOBER 2023

Protecting your wooded land for the future is essential to clean water, clean air, wildlife habitat, sustainable wood supply...all things that are necessary to society and health, and that are gone forever if the land is developed.

Inside this issue:

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Charlie Mitchell
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John Schwarzmann
Rod Sharka

Have you paid your PIF dues?

PIF and Northwoods Alliance are very grateful to all who assisted in the acquisition of Headwaters Cedar Community Forest, or have supported this great community conservation effort in any way.

WE are thankful to the University of Wisconsin Center for Cooperatives for their continuing support.

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Northwoods Conservation - Offering a ray of hope in a time of hyper forest fragmentation

Watersheds, public access, volunteer conservationists and the making of a land ethic
By Joe Hovel

On a sunny Autumn afternoon, a vibrant group of Land O Lakes middle schoolers made a short journey to the Upper Wisconsin River Legacy Forest. The educational mission was centered around natural resource management and sustainable forestry. It developed into much more, as the young attendees immersed themselves in dense jack pine stands conducting hiding games, eluding chaperones.

An afternoon of fun-filled frolic and learning, in the woods, in northern Wisconsin. What could be better? The ultimate reward would be for any of these students to develop an enduring ethic around land use and conservation.

Located in the Wisconsin River headwaters, the Legacy Forest supports numerous threatened and endangered species, such as the threatened Spruce Grouse. This boreal species is increasingly rare; found only in the far northern tier of Wisconsin in black spruce and jack pine.

The 1042-acre Legacy Forest attracts birders, folks hunting and fishing, and a steady stream of hikers, in addition to school groups. Less than a decade ago this gem was not accessible to the public! No-trespassing was replaced by welcome signs.

Public access and long-term protection for this property was secured through the Forest Legacy Program, a unique partnership between private landowners and the government. Forest Legacy, born in the 1990 Farm Bill and adopted by Wisconsin in 2000, is a grand-scale response to forest fragmentation.

Currently, Wisconsin has over 300,000 acres in conservation easements, enrolled in this common-sense program. Forest Legacy recognizes the needs of communities, from timber to recreation and clean water.

Another public-access conservation success lies just north of Vilas County, in the UP of Michigan: Wildcat Falls Community Forest. This 200-acres is a favorite for northern Wisconsin residents, where folks of all ages can experience a waterfall, canyon, magnificent rock outcrops, rare plants and old growth trees, all along a one-mile hike.

This unique region along the state border is the meeting of multiple watersheds: The Ontonagon and Presque Isle Rivers flow into Lake Superior, separating from two routes to the Mississippi. Water from two dozen Vilas County lakes flow into the Ontonagon, and water cascading over Wildcat Falls joins along the way, eventually all reaching the big lake.

Observing the rivers' journey is a multi-season undertaking; a mid-winter visit may leave the adventurous puzzled as to the waterfall location when the spray has frozen over and become concealed under deep snow. A snowshoer may locate it by the faint sounds permeating the frozen crust below their

feet. Enduring public access throughout the year is possible through the federal Community Forest Program.

Both of these special places offer recreational access and other benefits called ecosystem services. Crandon-based, forest historian Mike Monte wrote on these conservation efforts, “Doubtless there will be plenty of folks skiing, snowshoeing, hiking and trout fishing who will love using the land, even though they may not have a clue what a job it was to make it available to them forever”.

The ‘clue’ could lie in the actions of the people behind these projects. “Conservation? You have to want it”, commented long time forester John Schwarzmann. He added “It’s not only about good intentions- intentions litter the landscape like trash after the snow melts- these projects do not happen without action”. John was one of my Wisconsin colleagues who assisted in conserving several thousand acres in the Border Lakes region of Vilas County, all open to public access and some secured by state purchase.

Dick Steffes, retired in 2012 after working in land protection for WDNR over four decades, commented on landowners selling to the State. “They passed stewardship or property rights to the state, looking for assurances the land would be forever protected. It was gratifying to work with them to make that happen”. Dick assisted in creating the Upper Wisconsin River Legacy Forest in 2015.

The middle schoolers visiting the Legacy Forest at the Wisconsin River headwaters observed a landscape of globally-significant pine barrens, wetlands, ponds and rare wildlife. Chas and Asher are two young fellows who find adventure among this complex habitat in the Upper Wisconsin Wetland Pines. They are building wood duck and bat houses in a Vilas County shop, after studying the needs of these particular species. An enduring land ethic? Check back in four decades, perhaps they will rewrite this story.

PIF note: Creating these projects is extensively detailed in Hovel’s inspirational memoir From Barbells to Spruce Grouse, where he celebrates projects and partners on the journey to land conservation. All proceeds from this memoir support land conservation. northwoodalliance.org/books

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HEADWATERS CEDAR COMMUNITY FOREST Welcomes You

Northwoods Alliance Inc. (NWA), with Partners in Forestry Cooperative are pleased to announce the acquisition of the 195-acre Headwaters Cedar Community Forest (HCCF) in the Town of Land O Lakes. Headwaters Cedar is now in the registry of the USFS Community Forest Program and the Wisconsin Knowles Nelson Stewardship Program.

This project success opened 195 acres to foot-based recreation and is a strong compliment to the surrounding Northern Highland State Forest. HCCF has a diversity of timber stands which will be sustainably managed for the long-term health of the forest and the flora and fauna within. The community forest also hosts a stand of impressive northern white cedar with scattered legacy yellow birch and hemlock which will be retained for the aesthetic value provided.

Located near the watershed divide, in the heart of the Border Lakes Land Legacy area and on the headwaters landscape of the Ontonagon River-Tenderfoot Creek, HCCF is in the Great Lakes Restoration Initiative Habitat Connectivity Pilot Area of western Lake Superior. The project fronts on County Road B.

“In this time of extreme forest fragmentation, we are pleased to counter that trend by conserving this parcel, and securing permanent public access for all the related social and environmental benefits” said project activist Joe Hovel. He added “We should all be grateful for the conservation programs that make these projects possible, as well as the generous foundations and individuals who contributed”.

The Community Forest and Open Space Conservation Program of the US Forest Service is all about long term community involvement and benefits. HCCF is the programs first Community Forest in Vilas County and compliments the NWA Wildcat Falls Community Forest near Watersmeet MI. The Knowles Nelson Stewardship Program has been vital to Border Lakes conservation efforts over two decades, including a 2009 DNR acquisition of the Northern Highland tract bordering HCCF.

HCCF had early logistic support from the Town of Land O Lakes, two Vilas County departments and the Lac du Flambeau Band of Chippewa along with a variety of local groups.

To reach this milestone in headwaters conservation, Northwoods Alliance also received financial support from the Weeden, JC Bock, Watermolen, WE energies and Boulder Junction Community Foundations, the University of Wisconsin Center for Cooperatives, Upper Peninsula Environmental Coalition, Incredible Bank and numerous individuals.

To plan your visit to Headwaters Cedar and to learn more about all the Northwoods Alliance projects please see www.northwoodalliance.org or email nwa@nnex.net or call Hovel at 715-479-8528.

Northwoods Alliance Community Forest News October 3, 2023 A beautiful stone bench was set at Headwaters Cedar Community Forest, next to the kiosk. The strength of the stone symbolizes and stands in memory of, the unwavering community spirit of Land O Lakes philanthropist Margaret Baack. Margaret recognized the needs of the greater community and helped so many in this area through her generosity. May her spirit live on at these Community Forests.

September 2023 The welcome sign assembly was erected at Headwaters Cedar Community Forest. We are finalizing the Community Forest Management Plan. The plan is available by request. Enjoy your visit to Headwaters Cedar and to Wildcat Falls—these are your Community Forests! Also at the parking area of the Upper WI River Legacy Forest is a very large picnic table for your use. As always, on all projects, pack out your trash.

New Kiosk & signage at HCCF are complemented by a beautiful stone bench. The structure is made with local woods which are representative of the project and include cedar, spruce, hemlock, aspen, red & white pine. Large 8x14 timbers make a comfortable bench on each side. The structure is ~8' wide, with ~ 4' between the insides of upright timbers. Identify the woods in the kiosk in your visit, and send us an email. See the HCCF link at the website to read the sign.

AUGUST 2023 **Northwoods Alliance Inc. successfully closed on the acquisition of Headwaters Cedar Community Forest on August 1. These 200 acres are now open for non-motorized public access and you are welcome to explore this beautiful forest with all its features. We are grateful to all who assisted with this community accomplishment! Two very important considerations if you should visit before we have the opportunity to move the gate in a bit, improve parking, and install signage.**

1: Do NOT block the driveway, as this serves a private 10-acre parcel retained by the seller (a supporter of this Community Forest effort).

2: Please do not trespass on the 10 acres, as this is an in-holding in the southernmost portion of the Community Forest.

Northwoods Alliance now holds two community forests within reasonable proximity to Land O Lakes WI, as well as managing partner and advocate for other worthy projects in the area, including the Upper WI River Legacy Forest. We need your support to continue this important effort, and ALL donations go directly to projects, we have no paid staff or excess overhead.

Young'uns in da woods

Eric hiking at Upper Wisconsin River Legacy Forest –we are advocating for a 191-acre expansion of this well used public access gem in the Upper Wisconsin Wetland Pines Important Bird Area

Eric & Julia at Wildcat Falls

And Asher explored Wildcat Falls Community Forest

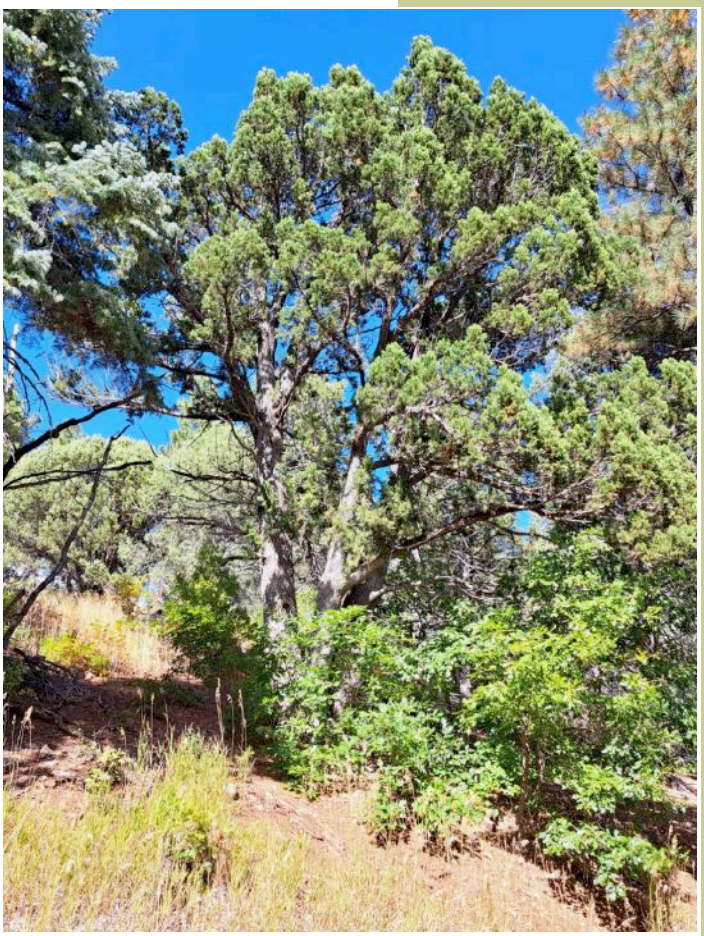
WOW- That's one big rock

And looking at the big picture across the globe from various public sources with various opinions expressed. Your opinion counts also, let us hear it and share it.

"If there's no source for seeds, heavily degraded soils, and no way for animals to get there, that's going to be a problem.

Deforestation has an immense impact on global heating, as the destruction of trees and plant life stops the absorption of harmful gases such as carbon dioxide, which otherwise remain in the atmosphere and contribute to rising temperatures. According to the World Wildlife Fund, up to 15 billion trees are cut down every year to help meet global demand for meat, soy, and palm oil.

But a 2021 study has found that forest regeneration can occur with unexpectedly fast recovery times if forests are simply left alone to grow and thrive. Research published in the journal Science and summarized by Anthropocene sought to see how former forests that have been turned to pasture and farmland could recover and how quickly the process could be achieved.



Anybody ever see an Alligator Juniper in the South West? Jack & Mary Jo sent this from a hike in New Mexico

A total of 77 different sites at different stages of growth were examined at the same time, including wet and dry forests in Central and South America, as well as coastal West Africa. Incredibly, after one to nine years, the sites were able to achieve 90% of the carbon, nitrogen, and soil density levels found in untouched forests.

Further, the size of tree leaves, tree wood density, and the number of nitrogen-fixing trees took between three to 27 years to return to old growth conditions. Clemson University ecologist Sara DeWalt noted that natural regeneration of forests is the most efficient way to do things, both ecologically and economically. "Nature will take care of it if we let it," she said.

However, the researcher also noted there will be times when intervention is required. "If there's no source for seeds, heavily degraded soils, and no way for animals to get there, that's going to be a problem," she said. "There will be times when planting will be necessary." While this is mostly encouraging research, it still brought up a couple of worrying findings. For example, it took 12 decades for species found in old-growth tropical forests to return to the new growth areas.

Bark on an Alligator Juniper

But, still, the fact that once-vital forests can return more quickly than anticipated is welcome news for biodiversity and carbon capture. An escalating trend of carbon-capture tree plantations has been primarily driven by the urgency of the climate crisis.

In an opinion piece published in the journal Trends in Ecology and Evolution, are now warning that some carbon initiatives might inadvertently endanger tropical biodiversity while offering minimal gains in carbon sequestration. Net zero emissions "The escalating threat of climate change has spurred global commitments to achieve net zero emissions by the middle of this century.

"To reach a balance between reducing emission sources and enhancing greenhouse gas sinks, land-based carbon sequestration is viewed as an important strategy to offset emissions, most prominently via nature-based solutions." "This, together with the commodification of carbon and the substantial growth of the voluntary carbon market, has resulted in a boom in the number of commercial tree plantation projects across tropical ecosystems with significant financial flows from private and public sectors towards carbon offsetting projects." Ecosystem degradation.

The experts argue that carbon-offset plantations might come with hidden costs. Instead, they say, we should prioritize conserving and restoring intact ecosystem "Despite the broad range of ecosystem functions and services provided by tropical ecosystems, society has reduced value of these ecosystems to just one metric - carbon," wrote the authors, led by Jesús Aguirre-Gutiérrez of the Environmental Change Institute at the University of Oxford. "Current and new policy should not promote ecosystem degradation via tree plantations with a narrow view on carbon capture."

Tropical ecosystems Tropical ecosystems, including forests, grasslands, and savannas, are favored for tree plantation because they promote rapid tree growth. Yet, contrary to popular belief, tree plantations designed for carbon capture seldom contribute to biodiversity or social-economic welfare, noted the Authors. Tropical ecosystems are renowned biodiversity hotspots that provide invaluable ecosystem services, including water quality maintenance, soil health preservation, and pollination.

Carbon-capture plantations Unfortunately, many carbon-capture plantations, typically monocultures, predominantly cultivate five tree species: teak, mahogany, cedar, silk oak, and black wattle. Although economically viable, these plantations tend to support lower biodiversity levels. For instance, the Brazilian Cerrado savannah experienced approximately 30% reduction in plant and ant diversity following a 40% increase in woody cover. Such plantations also inadvertently inflict ecological harm, including stream flow reduction, groundwater depletion, and soil acidification.

Little gain in carbon sequestration Experts noted the limited effectiveness of even the most aggressive carbon-capture plantation endeavors in sequestering carbon. "The current trend of carbon-focused tree planting is taking us along the path of large-scale biotic and functional homogenization for little carbon gain," wrote the researchers. "An area equivalent to the total summed area of USA, UK, China, and Russia would have to be forested to sequester one year of emissions."

Subterranean carbon storage The paper also highlights that intact tropical grasslands and savannas already function as significant carbon sinks, predominantly storing carbon underground. This subterranean storage, at risk of being lost if these areas are afforested, proves more resilient to environmental disruptions like droughts and fires compared to above-ground carbon stores in tree plantations.

Financial incentives Driven by substantial financial incentives, private firms are investing heavily in carbon-capture initiatives, a trend the authors believe is propelled more by economic considerations than ecological concerns. While carbon metrics are straightforward to quantify and monetize, an excessive focus on tree-planting for carbon capture could potentially undermine efforts to protect intact ecosystems, leading to unfavorable compromises between carbon, biodiversity, and ecosystem functionality.

The experts say we should prioritize conserving intact ecosystems instead of focusing on commercial tree planting. "An overarching view on maintaining original ecosystem functioning and maximizing as many ecosystem services as possible should be prioritized above the ongoing economic focus on carbon capture projects."

More getting out of the Northwoods into longer settled areas

No matter where one is located, we are surrounded by history, both natural and human. Many are interested in finding the remnants of the built environment that have survived through our long history.

People are commonly drawn to historic sites especially in Europe, from neolithic burial areas, standing stones, and cathedrals to medieval castles, monasteries, 19th-century former industrial sites, and more—all of which remind us of the past and reveal traces of what came before. Those interested in history can find plenty of sites to visit that are well-signed and often very well-preserved.

However, there is a different, hidden history that many people are not aware of or simply ignore: The traces that remain of precious natural habitats, some of which we have lost due to human activity. Finding remnants of our ancient ecosystems, and recognizing more clearly what our landscapes once looked like, can help us see where things have gone wrong and potentially be very important in helping us put things right in the future.

Finding Traces of Lost Habitats in the Soil The soil below our feet holds many clues about the habitat on a particular site over the years. The different layers of organic matter built up over time can tell us a lot about what once grew there. Scientists can discover many details not only about people and their activity but also about the vegetation on a site by digging deep and analyzing what they find below. Of course, the layperson cannot always discern much from the soil. So, we may need to look for other clues to help us understand the vegetation that once covered a site.

Finding Traces of Lost Habitats in the Seed Bank Amazingly, ancient woodland sites, even when the trees are gone, can still produce plants of the understory that have built up in the seed bank of the area. Often when particular plants are seen in profusion, it can be a sign that the area was once the site of a particular variety of oak woodland. Many woodland species might remain in an area even when the woodland has disappeared.

Identifying areas that used to be woodland can help us find the best areas for rewilding. We will sometimes see natural regeneration by removing pressures such as overgrazing (by deer, for example) from an area. Or, where regeneration cannot naturally occur, we can determine excellent areas for tree planting.

Finding Traces of Lost Habitats in Place Names Sadly, all too often, ancient woodlands and other precious habitats have disappeared entirely from the visual landscape. But as well as taking clues from the location, geography, microclimate conditions, and making educated guesses, we can also often gain clues from place names.

Place names often give us clues that can lead us to recognize ancient landscapes and ecosystems now gone. For example, many examples of place names indicate the presence of woodland or certain specific tree species where none now stand. We can head on a fascinating journey into the past by examining old maps and analyzing place names to discover what ecosystems were entirely or partially obliterated by building, farming, or plantation forestry, for example.

We can look for names of villages like Birchover or Oakley, once homes to birch and oak trees. The Old English word "leah" means a field or clearing in a forest. The element survives today at the end of place names as "ley." Thus a name like Ashley suggests it was once surrounded by ash trees.

By reading the clues in the naming of places and the clues within the landscape itself, we can build up an even clearer picture of lost habitats and work out where we might begin with rewilding and restoration. By finding the traces of lost habitats around us, we can see more clearly the strong connection people have had with places and nature throughout history.

We can learn precisely where, why, and how a decoupling took place and think about how we can repair our links to the habitats around us and live in harmony with the natural world—building back and restoring for ourselves, as well as for the wildlife around us.

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Another reason we need to keep our maples healthy

Mint and Maple: Nature's Memory Medicine

Paul Hetzler

Eating ice cream on a regular basis helps combat Alzheimer's and other forms of dementia, according to recent studies. At least that's how I interpret the results. In any case, there's good news about treating cognitive decline, and it's tasty.

In North America, nearly one in ten adults older than 65 has some form of dementia, while another 20 or so percent have mild cognitive impairment. With treatment costs rising and our over-65 cohort expanding faster than the population at large, dementia is a topic that won't get old anytime soon.

Though Alzheimer's disease was first described in 1906, it seems to have been mostly forgotten until the mid-1970s, when real research began at last. Historically, those with dementia were locked in asylums and subjected to brutal "cures" such as lobotomies and electric shocks, practices that continued through the 1950s. Later on, antipsychotics like haloperidol came into vogue for calming aggressive patients, until it was found such drugs made dementia worse.

Donepezil and other cholinesterase inhibitors, which tweak brain chemistry to aid memory, arrived on the scene in the late 1990s. And now there's a drug called lecanimab, approved just this year, that slows or even prevents the formation of brain plaques and tangles thought to cause Alzheimer's and certain other dementias.

But treatment goes beyond medication. Proven techniques for mild dementia include what's known as cognitive stimulation therapy. In a group setting, patients discuss world events, collaborate on novel tasks, and play word and math games. For those with advanced brain disease, reminiscence therapy is a one-on-one talk about times past, using beloved objects or favorite songs to help spark memories.

We know smell and recall are closely linked. But until a few years ago, aromatherapy for dementia patients was relegated to non-medical use by family and friends of loved ones, since there was little science to support its value. Fortunately, that has all changed.

The reason smells can evoke deep emotions and rich memories is because other sensory inputs go through the thalamus, a "sorting hat" which routes data for processing elsewhere in our brains. But aromas zip from our olfactory bulb directly to our hippocampus, without passing "GO" or collecting $200. The hippocampus is

involved in memory formation, and has been shown to be more strongly connected to smell than to any other sense. Aroma is likely how Santa, who's hundreds of years old, still keeps track of all those kids and presents. He's got fragrant evergreen boughs, a tang of reindeer dung, and smoky chimneys to jog his memory.

In a report that came out in April, 2023, researchers from the University of Navarra in Pamplona, Spain detailed how a mere whiff of menthol, an essential oil extracted from mint leaves, improved cognitive function in mice. I'm not sure if we need or want our mice to be any smarter, but that's what happened to every test animal. However, this is not even the most intriguing part of the study.

In addition to normal mice, the research team got their hands on a strain of transgenic mice that were modified to have the kind of brain plaques that cause Alzheimer's disease in people. These poor mice got dementia quite young, but apparently still figured out the reproduction thing, which was a plus for the team. To the researchers' surprise, brief daily exposure to mint oil for six months was enough to completely halt cognitive decline in mice with Alzheimer's.

The cool thing about mint is that it's easy to grow – in fact, the hard part might be keeping it in check. It prefers moist, rich soils, but seems to thrive just about anywhere. Place a fresh mint sprig in water, and it'll begin to root in a week or so. Once the roots are fairly well developed, transfer it to a corner of your property where it won't be a nuisance if it spreads. Dried mint can be kept in glass jars for use in winter.

A topically related study done at the University of California at Irvine this year took aromatherapy one step further. Published in July, 2023, the report states that diffusing trace amounts of essential oils into the air during sleep improved brain function 226 percent in adults age 60-65. The odorants used in the six-month trial were not specified, but it's a safe bet mint oil works as well, if not better, than other scents. I've already begun doing this at night – I'll let you know when I feel 226% smarter.

And in 2016, scientists from the University of Toronto went public with findings – which they admitted were preliminary – that maple syrup helps prevent Alzheimer's. Natural phenolic compounds in maple syrup apparently keep tangles and plaques from forming in the brain. It's only right that this research took place in the maple capital of the world. Since that time, maple-syrup studies in the U.S. continue to affirm the results from the earlier work done at the University if Toronto.

Exercise, good sleep habits, a balanced diet, and plenty of social interaction will help protect brain function. It's best to avoid smoking and limit alcohol as well. Given this new information on the benefits of eating syrup and sniffing menthol, I think we should all add mint ice cream topped with maple syrup to our diets. Just to give our brains a leg up – there's no sense taking chances.

This article by PIF friend Paul Hetzler first appeared in the Québec Farmers' Advocate

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As a service to PIF members, contact Joe for special pricing in your needs for:

*** Napoleon wood stoves**

*** wood finishes and preservatives**

*** garden and tree amendments**

*** grass seed for trails**

PIF note: As you read this report which is primarily centered in the north east, be aware these same concerns reflect us here. Please see earlier issues of Partners News to rehash some deep concerns about our area sugar maples. Jan-Feb 2013 is a good one to look at.

Hunting for Red October: Leaf Colours Indicate Maple Distress

By Paul Hetzler

The dearth of red fall colour in sugar maples, a broad regional trend first noted around 2018, is unrelated to fall weather or to the growing conditions in a given season. It's a troubling sign that sugar maples as a species may have entered a long-term and perhaps irreversible decline.

Although every fall is beautiful, some years are notably vibrant, while others – like 2023 – are more subdued. We know that weather is the main factor that determines the brilliance of the autumn leaf display.

An unusually wet spring /early summer will favour the growth of leaf pathogens like shot-hole fungi, anthracnose, and bacterial leaf spot, all of which cause brown patches on leaves. Conversely, in drought years, trees are starved for water and nutrients, and overall pigment production is down. Even after a strong growing season, protracted fall rains can tone-down colour intensity, and an early hard frost or a violent windstorm will truncate the "leaf peeper" season.

Plants make yellow-coloured molecules, called xanthophylls, as well as orange ones, known as carotenoids, to aid with photosynthesis and to protect cells from oxidative stress. As we know, these pigments are always present in leaves, but are masked by green chlorophyll all summer.

However, the red and purple range, brought to us by a class of chemicals known as anthocyanins, are definitely not cached under chlorophyll's cloak. These large, polycyclic organic compounds cost plants a lot of energy to make. While relatively few species colour their leaves red in the fall, sugar maples and soft (red) maples are famous for their rosy foliage. Some oaks produce deep scarlets, and dogwood and ash often make red-purple hues. Many genera of shrubs, including Viburnum, Aronia, and Amelanchier, flaunt their mélange of anthocyanins; salmon, coral, crimson, raspberry, ruby, and burgundy (I may have missed a few variants).

Plants invest in anthocyanins in spring to protect young leaves, as chlorophyll is prone to UV-light damage in cool conditions. Think of red pigment as suntan lotion for baby leaves. As the weather warms and leaves mature and harden-off, plants quit making these pricey compounds.

Early-season red makes sense. But why some trees splurge on anthocyanins in the fall when they should be hoarding energy for next spring is a mystery. As daylight dwindles in autumn, hardwood trees begin to rob their leaves of sugars and other goodies, clawing back roughly half the nitrogen, phosphorous, potassium, iron and other nutrients for safekeeping in trunk and root tissues. While they drain the leaves, they also deposit wax (suberin) between twigs and leaves to plug the vessels that supplied water and nutrients to their leaves all season.

As a result of this self-vandalism, chlorophyll breaks down, which lets the hidden yellow and orange colors to make their debut.

Notorious for being frugal and pragmatic, trees don't dip into their savings accounts – stored starches in woody tissues – without good cause. Few hypotheses exist as to why trees make red. Among those brave or

foolish enough to say they know the answer for sure, the “fall suntan lotion” notion is a favourite, since cool nights and sunny days trigger red production. However, it seems odd to claim trees use precious starch reserves to shield chlorophyll from UV rays while they’re hard at work making waxy abscission layers to kill said chlorophyll. By the time a leaf turns red, there’s generally not much left to protect.

Another idea is that when red leaves of a given species fall to the ground, they change soil conditions in a way that favours it and suppresses other kinds of trees. There are myriad plant-made chemicals known to inhibit the growth rates and /or seed germination of competitors, a process known as allelopathy. Typically, roots give off allelopathic chemicals – it’s why you don’t want your garden near a black walnut tree – the juglone released by walnut roots kills tomatoes and potatoes. The problem with this rationale for red is that anthocyanins in fallen leaves have a very weak allelopathic effect.

In the end, though, an explanation for red autumn leaves matters little.

What’s significant to bear in mind is that the making of anthocyanins in fall is optional. In a very real sense, it’s a sign of a tree’s disposable income. When a species once renowned for its ruddy fall foliage suddenly goes on an anthocyanin strike and looks more like silver or Norway maples, it’s a cause for concern.

This phenomenon hit me right between the eyes starting in the fall of 2018. Not surprisingly, it came on the heels of unprecedented (in terms of low soil moisture) droughts in 2012, 2016, and 2018. Plant Pathologist Dr. George Hudler of Cornell University says it can take two to three years of normal soil moisture for a tree to recover from moderate dry periods, let alone these mega-droughts. Furthermore, in 2013 and 2017, sugar maples used large amounts of energy to put out massive distress crops of samaras after two of the worst droughts.

Waves of tent caterpillars, which do not touch red maples, stripped sugar maples of their leaves for two or more consecutive years from 2015 through 2019. This was followed by outbreaks of spongy-moth (formerly gypsy or LDD moth) caterpillars that swept across southern Canada and parts of New England between 2019 and 2022.

Among all my forester and arborist contacts in northern New York State and southeastern Canada, as well as colleagues from Cornell Cooperative Extension, not one could find a red sugar maple in 2018. The same went for 2019 through 2022 (this year, I have noticed a tiny proportion of sugar maples, none of which are over 30 cm in diameter, showing a minimal amount of anthocyanin in their leaves).

Yet even prior to the change in sugar maple’s colour regime, scientists were concerned about this species. In October 2015, the alarming results of a study which documented forty years of maple growth rings in the NY’s Adirondack region came out of the State University of New York’s Environmental Science and Forestry College in Syracuse. One of the study’s co-authors, Dr. Neil Pederson, an expert on tree rings and climate change, wrote these chilling lines in the report:

“Outside of studies of red spruce in the 1970s, I have never seen anything quite like this. Most tree-ring studies of canopy trees in the region do not show a decline like what we see in these sugar maple. Combined with evidence of reduced natural regeneration of sugar maple in the region, it is a concern.”

Sugar maples are in uncharted territory. Scientists at the US Forest Service believe that by the end of the century, sugar maple will exist almost exclusively in Canada. But in what kind of condition?

It’s possible that enclaves of sugar maples will survive in isolated nooks and crannies in the Adirondack, Green, and White Mountains and other similar terrain. Variation of slope and aspect in the mountains creates

"climate refugia," micro-habitats favourable to a sensitive species. These refugia resist change, but are not immune to it.

Luckily, we do have agency in determining our future. According to the Canadian Association for Educational Resources, "By 2100 the atmospheric CO_2 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 numbers offers us a chance to slow the rate at which tree species' ranges 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 planting a tree. Or biking to work, or changing to LED bulbs. Every drop makes it less likely the next generation will ask "Hey Grandma (or Grandpa), tell me that story about when maples grew here.

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Have you checked out PIF's website?

www.partnersinforestry.com

The website is for members to expose your business, service or tree farm, share thoughts, ideas, articles, photos, and links.

This is your COOP, we need your input as much or more than your dues.

FUTURE ARTICLES

If you have questions that you would like to see addressed in the newsletter, suggestions for, or have articles for, future newsletters, please contact us at partnersinforestry@gmail.com or by mail:

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