*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.*

## Contact Us


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## PIF Board

**Joe Hovel**
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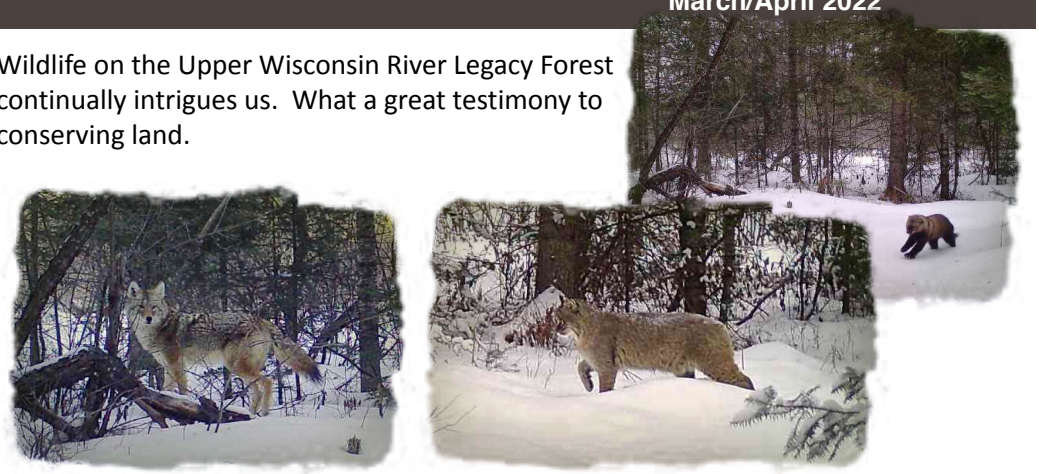
***Have you paid your PIF dues?***


**"This institution is an equal opportunity provider."**


# Partners News


**March/April 2022**


Wildlife on the Upper Wisconsin River Legacy Forest continually intrigues us. What a great testimony to conserving land.



Photos: Collected by Quita Sheehan on Snapshot Wisconsin camera

## Inside this issue:

## UNIVERSITY OF WISCONSIN CENTER FOR COOPERATIVES

We are very grateful to the University of Wisconsin Center for Cooperatives for their increased support to expand our forest land conservation efforts, search for carbon solutions for landowners and advance the Headwaters Cedar Community Forest (HCCF). The HCCF, like Wildcat Falls, will be a publicly accessible destination to experience the wonders of nature, and an ideal location for natural resource-based education. The diversity on the forest sequesters carbon, as there is 50 acres of cedar to be allowed to continue development into old-growth, legacy hardwoods and hemlock, as well as stands which will be rotated for forest regeneration. The project exemplifies the importance of conservation at this time when we are seeing unprecedented development all around us, permanently altering the landscape. Our strident partnership with Northwoods Alliance is a key to this effort. We are also happy to see the UWCC support the Timber Professionals Coop, as we need markets for our forest products. We wish them success in establishing new markets and reviving paper mills if possible.

Cooperative Forestry Grants Awarded (reprinted from UWCC release) Every winter, UWCC solicits proposals from cooperatives and non-profit organizations to fund the development of Wisconsin-based cooperatives or cooperative groups focusing on forest management, forest-related products, biomass energy, and forest-owner policy initiatives. This year, UWCC received seven applications totaling $111,280 in grant dollars requested. UWCC awarded two grants totaling $47,500 to the Northwoods Alliance, Inc. (NWA) and Partners in Forestry (PIF) Cooperative, and the Timber Professionals Cooperative (TPC). NWA and PIF Cooperative will expand their Forest Conservation Initiative, advance the Headwater Cedar Community Forest project, and identify opportunities for cooperative members related to carbon credits. TPC will pursue opportunities for its membership to acquire mills and advance the multi-stakeholder mill ownership and operation model. As an emerging co-op, TPC will also continue to grow its membership and its communications and resource channels through its website and newsletter.

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## Headwaters Cedar Community Forest Update

As we shared with you in the last issue, application was made to the USFS Community Forest Program for the Headwaters Cedar Community Forest. While we have been busy looking for outside support for this great project, we have hesitated to aggressively request local donations as yet. We are very grateful for the rapid support achieved last year to add 40-acres to the Wildcat Falls Community Forest. We anticipate seeing a USFS grant award by June 1. At such time we will notify everyone about progress and request your help. A community forest is all about community. Every well-functioning community in the Northwoods deserves a community forest. We hope to help achieve such a goal. The health of a community depends on the health of the environment sustaining a community. Lets stay healthy and support the natural resources for the health of future generations.
Headwaters Cedar Community Forest is a project of Northwoods Alliance Inc. with widespread support from the area. See updates, maps and photos at www.northwoodalliance.org

We are very grateful to the Upper Peninsula Environmental Coalition, for their $10,000 award to Northwoods Alliance to establish the Headwaters Cedar Community Forest. This award demonstrates the value of partnerships and shows us the importance of crossing state lines with our conservation efforts. The Ontonagon River headwaters region includes the HCCF, and the Ontonagon River Tenderfoot branch is especially affected by the conservation project. The Tenderfoot flows into Palmer and Tenderfoot Lakes, releasing in the UP and merging with the Cisco just north of US Hwy. 2. Continuing the journey to Lake Superior, the Cisco merges with

the Sucker (feed by Scott & Howe from Wildcat Falls) forming the South Branch. Continuing north the South Branch mergers with the West Branch (from Lake Gogebic) and flows to Victoria. Recall the Victoria feature in the Handbook, where our efforts assured 220 acres of rugged bluffs and river frontage be publicly accessible with acquisition by the Ottawa National Forest. The river system includes incredible scenic features, with Wild and Scenic designation.

On March 3, 1992, the following reaches of the Ontonagon's upper tributaries were collectively designated the Ontonagon National Wild and Scenic River: The upper courses of the East and Middle branches in the Ottawa National Forest; the Cisco Branch in its entirety; and approximately the middle section of the West Branch, from Cascade Falls to the Victoria Reservoir.

### Thank you to UPEC as expressed by Joe for the UPEC annual meeting in March

Northwoods Alliance Inc. gives a sincere thank you of appreciation to the Upper Peninsula Environmental Coalition (UPEC) for their community grant award to be used for the Headwaters Cedar Community Forest project in the town of Land O Lakes. Their support, along with other local donors, has kicked off the fundraising effort for this great project, which protects the headwaters of the Ontonagon River, old growth cedar, important wildlife habitat and special plants, in the heart of the Border Lakes area.

This project will open 200 acres to public foot access and has wide spread community support. Surrounded by the Northern Highland State Forest, and in close proximity to other protected lands the Headwaters Cedar project is strategically important to conservation goals in northern Wisconsin and the UP of Michigan.

UPEC was the first substantial financial assistance to our Wildcat Falls Community Forest with their 2018 grant. We value this partnership.

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## Update from the Environmental Law & Policy Center on the wilderness proposals in the UP

The Keep The U.P Wild coalition has surpassed 300 members. The coalition is the collection of Michigan environmental, outdoor recreation, academic, political, and business organizations working to advance new Wilderness areas in the U.P. www.keeptheupwild.com

Photos: Ron Eckstein

*The wilderness proposal in the UP includes an expansion of the Sturgeon Gorge Wilderness.*

*The Sturgeon is a wild river in a highly scenic area, surrounded by rough terrain.*

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## Sequestering Carbon in Your Woods - Improved Forest Management (IFM) Practices

By John Schwarzmann

Landowners who wish to sell carbon credits from their woodlands usually opt to demonstrate that improved forest management will hold more carbon per acre than the typical business – as – usual (BAU) scenario for similar forest types. The amount of carbon credits than can be sold are based upon the difference between the tons of carbon held on the carbon credit acre vs. the BAU acre. This difference is known as "additionality".

Managing for additionality requires knowledge about how forest types react and grow if they are logged less intensively than the BAU acre. The amount of carbon held in a given forest varies across the major forest types in northern WI which dramatically influences the potential for additionality and quantity of carbon credits that can be sold from a given property. For example, oak forests with deep root systems and long-lived conifer forests such as Eastern white pine and hemlock hold significantly more carbon than shorter-lived forests of smaller trees such as trembling aspen or balsam fir stands.

Forests that contain high carbon levels generally have a greater potential for additionality than low carbon forests but all forests have some capacity to hold additional carbon under the right management scenario and are therefore, usually enrolled together for a given landowner's application to sell carbon credits.

*A large diameter yellow birch legacy tree on the Headwaters Cedar project has sequestered carbon for generations*

While there may be a large number of silvicultural practices that can potentially enhance additionality, they can generally be placed under three categories.

**1. Longer rotation ages**. For forests that are even-aged such as red pine and aspen, the rotation age is the age of the stand when the oldest trees are cut forcing a transition to a regeneration sequence and a new forest. For aspen in northern Wisconsin the rotation age can vary from 40-45 years on low nutrient sites to 65-70 years on richer sites. For an aspen stand under a BAU rotation age of 50, the average mid-point year is 25. That average stand contains 25-year-old trees which are still quite small and therefore, don't hold very much carbon per acre. If the rotation age is lengthened to 70, the average age of that forest would be 35 years old. 35-year-old trees are significantly larger than 25-year-old trees and therefore account for additional carbon storage than the typical BAU tree that is 25 years old. The amount the rotation age is increased is usually dependent upon site quality. The richer the site is in nutrients and moisture holding capacity, the longer a given forest can continue robust growth making a longer rotation age a good alternative.

**2. Delayed harvest entry** – For forests with tree ages that span a very wide spectrum such as northern hardwoods, harvests are timed to coincide when the forest reaches a given density. These harvests are intended to reduce density and competition on residual trees and create gaps for regeneration. These harvests are frequently referred to as 'thinnings' and usually remove ¼ to 1/3 of the stand. In northern WI and the UP, northern hardwood stands are thinned under a typical BAU approach when they reach a basal area of 120 square feet per acre and reduced to a residual basal area near 80 square feet per acre. These thinnings occur at intervals of 10-20 years depending upon growth rates. The typical stand has an average basal area density of 100 square feet per acre. If thinning is delayed until the stand reaches a basal area of 140 square feet per acre and reduced to a

density of 100 square feet per acre (Same volume removal as the BAU cut), the average density will be 120 square feet per acre, a 20% addition over the BAU approach.

3. **Forest Reserves** – In some cases, it makes sense to reserve some forests entirely from any timber harvesting. This approach makes the most sense for sensitive soils that would likely become rutted during normal harvesting operations such as wetland soils or for forests that can't be regenerated due to excessive deer browse damage. For example, northern white cedar is experiencing a nearly complete regeneration failure over most of northern WI and much of the UP due to deer browsing. Harvesting cedar under this circumstance would more closely resemble a timber mining operation since those forests cannot replace the cut trees and for that reason cannot be sustainably managed. These forests could be totally precluded from timber harvests with the result that they would gradually accrue additional growth and carbon storage over time. Another timber type with a similar condition is eastern hemlock. This long-lived species can grow for decades under dense conditions and add large quantities of carbon in a high-density condition.

While the additionality of any timber management scenario is greatly impacted by the timber types and inclusion of the three management approaches described above, it is also highly dependent upon the selection of the baseline or BAU forest. In general, the lower the average age and stocking (tree density) of the baseline forest, the greater the potential for more carbon credits from a given landowner's forest.

Carbon credits schemes are frequently criticized for choosing baselines that are much too austere compared to the average forest thereby inflating the number of carbon credits that can be sold. Unfortunately, if the baseline scenario used as a comparison to carbon credit forests estimates carbon storage that is too low, the credits that are sold will not lead to enhanced carbon storage. For example, if the baseline assumes an average of 10 tons of carbon per acre and the carbon credit acre holds 20 tons. The landowner could potentially sell credits worth 10 tons per acre. If, however, the baseline is inaccurate and the real average BAU forest holds 15 tons per acre, the additional sequestered carbon would only be 5 tons although the program may pay for 10.

For northern Wisconsin private lands, the baseline is estimated to be a liquidation scenario where the private forest is either completely logged off and regenerated or converted to another land use such as residential housing or storage buildings. This baseline stores very little carbon in forests and offers a huge opportunity to sell carbon credits from lands devoted to maintaining larger, older, more dense forests. While the liquidation scenario has been criticized as too extreme, the explosion of housing density that has occurred in northern Wisconsin since 1980 appears to help support the accuracy of the baseline scenario. In addition, the fact that most private or corporate timberlands are owned less than a decade by any individual or Timber Investment Management Organization (TIMO) also supports the liquidation assumption since many landowners cut all their timber before they sell the land.

As more public forests enter the carbon credit market, the baseline scenario will likely be changed to reflect both a private liquidation baseline and a public BAU baseline that assumes frequent timber cutting but not complete liquidation of the timber resource.

*John is VP of Partners in Forestry Cooperative and Northwoods Alliance Inc. He has a Master's Degree in forestry, and as had a long career with the Wisconsin Board of Commissioners of Public Lands. His expertise includes managing forests under extended rotation, growing quality hardwoods to their best size and grade. He is a long-time conservationist, concerned about the rampant degree of forest fragmentation we witness all over the Northwoods, he searches for solutions.*

*A grove of hemlock on the Headwaters Cedar project*

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## Equipment Review – Capstan Portable Winch

By Geary Searfoss

Equipment being reviewed is the gas-powered Capstan 'Portable Winch' Model Number PCW5000-FK with 2,200 pound pulling capacity powered by a 2.1HP Honda GHX-50 engine. It is made by Portable Winch Co of Sherbrooke, Quebec. Canada. You can view videos of the unit being used at www.portablewinch.com. I purchased my "Forestry Kit", which included the winch along with a bunch of accessories, through Amazon but it was actually being sold by Shade Tree Powersports. I see in the latest issue of "Wisconsin Woodlands", an advertisement from a Wisconsin business, Northern Woodsmen LLC from Burlington, that also carries the winch.

I had to swallow hard at the purchase price, $1,764 when I purchased it in 2019 (now $2,052 or more) but it was a far sight cheaper than the ATV I was looking at to do the same thing. Even though it was a bit pricey I was very impressed with the quality of everything that came with the kit. The Honda engine starts easily and is quite dependable. The direct drive clutch with the capstan attached to the side of the engine is very solid. The unit has a carrying handle which allows you to carry it through the woods though, if you are carrying it long distances, its weight (35 pounds) makes using a wagon or a sled desirable. With all the stuff you take with it, using a wagon or sled will make multiple trips unnecessary. I'll heretofore refer to the power unit/capstan combination as the "winch".

Coming with the kit was a very versatile and tough skidding cone, a slip chain choker, a 50 meter (164 foot) climbing rope, two carabiners, two very tough polyester slings (I see the kit now only includes one – you will want two), one flat locking grab hook, a snatch block pulley (a pulley with swinging sides so you can slip it over the rope at any point without having to feed the rope through), and a rope bag.

How It Works

You need to find an anchor point. In the woods that will generally be a tree. You loop one of the polyester slings around the anchor point and attach the ends to the two hooks on the base of the winch. Slip the choker chain around the butt end of the log, feed it through the hole in the front of the skidding cone and attach the flat lock grab hook to the choker chain as it exits the skidding cone. Attached to the grab hook is the rope. Walk the rope bag in a straight line back to the winch. The rope will feed itself out of the rope bag as you walk. After firing up the engine, wrap the rope several times around the turning capstan, feed through the hook just above the capstan, and put tension on the rope. The friction of the rope going around the capstan provides the pull that will bring the log towards you. Again, you can watch videos on www.portablewinch.com.

*I typically skid two or three logs and then move anchor points.*

Notes on Use

With just the power of the engine, I am able to skid out logs that I was never able to skid out before. The light weight and small size allow me to go places in my woods I would never be able to access with other equipment. You'll note that in some of the promotional videos they show the unit pulling out a stuck vehicle. Without additional block and tackle, however, the engine is not strong enough to pull my plow truck out of a snow drift – I tried.

The climbing rope that skids the logs is very strong but it does stretch. You'll note that many times the load will not move at a consistent speed but will move in a jerky motion as the rope stretches and then relaxes.

This can make the whole winch unit jump up and down or thrash back and forth, violently at times. You'll want to make sure it doesn't slam itself into a rock or a tree, or your shin. That might not end well. You'll also note that the instructions advise keeping the rope out of the dirt, which is darn near impossible. The capstan sits only a couple inches off the ground so if you have any relief to your property at all, the rope will be in the dirt.

The logs slide along the ground, so if they go through a mudhole, and they always will go through the mudhole, the log will be covered with mud. Even if not muddy you will find a fair amount of soil particles in the bark crevices. This can be an issue if you have your own sawmill but don't have a debarker or are drilling the logs, say, to inoculate mushrooms. The soil is very hard on a saw blade or drill bit. My favorite time to skid logs is when the ground is frozen with an inch or two of snow. No dirt, the logs slide easily on the snow, but yet there isn't enough snow to get in the way. If a person could figure out how to use the winch with a logging arch, that would definitely be a plus.

Skidding is very slow and a bit klutzy. The rope is only 160 feet long so you need to reposition often depending on how far you are pulling. The unit pulls at a rate of forty feet per minute (just under one-half mile per hour) which sounds fairly fast but, generally, something happens during the pull that requires the load or rope to be repositioned. Typically, that happens when the log goes on one side of a sapling or tree while the rope is on the other side. If your land is hummocky the log will typically roll to the bottom of the hummock, often resulting in that situation and requiring that the load be unhooked and re-hooked to avoid the obstruction. Sometimes you just run into an immovable object. You also don't want the line to rub against objects in its path. In a woodland situation, unless your understory is completely open, that is easier said than done. You may need to unhook and re-hook several times during one pull, especially if you are skidding through a young pole stand, because the log doesn't always travel exactly where you thought it would. It takes me about two hours to snake a log one-quarter mile through the woods. If you have a nice road system with well- spaced anchor points, it would take much less time. But if you had a nice road system you could just skid the log out with your truck.

Skidding in deep snow can be a real challenge. The winch will disappear beneath loose snow so you either have to shovel or pack the snow in front of the anchor point, or place a piece of plywood over the snow to set the winch on, or a combination of all three. Snow has a habit of getting everywhere and allowing the engine to get wet definitely impacts how it runs. I've also had the issue of snow getting into the starter cord housing, melting, and then refreezing thus preventing the assembly from engaging the engine when trying to start. If there is a significant crust on the top of deep snow, the log being skid will dive under the crust and the engine will have an extremely difficult time pulling it unless you use block and tackle to magnify the force or physically break up the crust along the skid path. It's definitely a challenge when you're wallowing around in deep, crusty snow wearing winter gloves trying to hold onto metal pulleys that have gotten slimy from being dropped in the snow. Then again, the ATV I was considering probably wouldn't work well in that situation either. I've also noticed that if the snow is sticky, skidding becomes a real challenge and the engine will labor to pull the log, along with all the snow sticking to it.

When skidding logs through the woods you often want to make the log change direction. This is easily done without moving the winch by identifying an additional anchor point between the capstan and the load. Wrap your second sling around that anchor point and clip the rope to it using the snatch block. Once the load reaches that anchor point, unhook and remove the snatch block and continue skidding the log to your original anchor point. This setup initially takes some planning to avoid having the rope end up rubbing against trees along the way.

Be very aware of what is happening while you are skidding. On several occasions I have managed to let the rope wrap around itself on the capstan. Once the rope stretches to the point where it kills the engine it is very, very, very tight. One end of the rope is wrapped around itself on the capstan attached to the anchored winch unit, and the other end of the rope is attached to a very heavy log. Not an easily remedied situation. Time to get out the Come-Along and some chains!

*Took this picture as the temps hit the mid 40's. Hard to tell that there is a log in this picture with all the snow sticking to it. At this point it becomes so difficult to skid using the winch that you're better off just kicking back and having a beer.*

You'll want to set the throttle before you start winching. As the throttle is on the opposite side of the engine it is very difficult to reach over and adjust while operating.

Although the winch does most of the work, your arms and upper body will still get a good work out. That's not necessarily a bad thing assuming you're still trying to look good in a swimsuit. It's tension on the rope that produces the friction around the capstan that skids the load. You also have to maintain tension to keep the winch upright. Not enough tension can cause the winch to flop on its side or become totally inverted, either of which will kill the engine. The harder the pull, the more tension you have to maintain. You will definitely feel it after a day of skidding logs.

Summary

If you're expecting production, you will be very disappointed as skidding logs with this system is not fast. On the other hand, if you have areas of your property that are inaccessible to larger equipment this will be the difference between getting the log out or leaving it to rot in the woods. If you just have an occasional log you want to get out of the woods or some firewood you want to pull to the roadside and don't want to spend big bucks for another solution, this will prove to be a handy tool. You'll also likely find some other uses for this winch around your farm.

*Geary has been a long time PIF supporter, and retired from his CPA business spends more time in his woods, engaged in his mushroom business, and skiing the Birkebeiner, assuring he still looks good in a swimsuit. Read his past writings for Partners News as well as the Handbook.*

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## 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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*PIF friend Al Murray left the Vilas County Forest for a new position. We wish him the very best.*

## Forestry, Parks and Recreation Spotlight

### It Seems We Must See the Forests for the Trees After All!

In this article we will discuss protection of forests by control of tree health and tree regeneration.

Forests as an ecosystem, historically existed with limited human interference, however industrialization and large increases in the human population have forever changed the forest. The forest and trees that currently exist in northern Wisconsin are the result of an ecosystem that was forever changed by the cutover period in the late 1800's and early 1900's, the wildfires that ravaged after that cutting and land converted to agriculture that are now again forest. Severe wildfires of that time also likely changed the soil chemistry and water chemistry of lakes, streams and wetlands, making the ecosystem changes permanent in the terms of human years.

Today the forest ecosystem is severely limited by direct human interaction including development of roads, buildings, infrastructure, recreational use, and preclusion of historically naturally occurring wildfire. The forest is also put at increased danger from that human use including increased ignition sources for fires, increased introduction of pests and invasive species, fragmentation of the forest and the potential for unstainable harvesting practices resulting from human demand for forest products. The fact that the forest and trees still exist in northern Wisconsin is a testament to the natural resiliency of the forest and trees themselves.

Although forests are an ecosystem with many working parts, trees are the cornerstone of that ecosystem. Without trees, the forest ceases to exist. The forest ecosystem is limited by past and current human interactions, however the health and vigor of the trees within the forest can be managed and protected with assistance by humans.

Each tree in the forest has specific needs for space, light, water and nutrients. Each different tree species has a variation in these needs, this is known as silvics of the species. The land and soil, also known as a site, provide limitations on water and nutrients within each site. The number of trees growing on a site determines the availability of space and light. Trees with proper amounts of space, light, water and nutrients are healthy and vigorous, have rapid growth, and are resilient to insects and disease. Trees lacking space, light, water or nutrients decline in health, decline in growth and are less resilient to insects and disease.

Silviculture is a science that has developed and has been commonly practiced since the cut-over period. Under the practice of silviculture, individual sites on the forest are assessed to determine the tree species potential based on soils and water availability. Site indicators are used to determine the tree species which are best suited to the site. Prescriptions for the sites are then developed to provide management activities which maximize tree growth, health and resiliency and provide plans for regeneration of the trees for the future. Prescriptions commonly include timber harvesting, timber stand improvement, and site preparation. Following these prescriptions will provide space and light for remaining trees and provide the correct conditions to assist natural tree regeneration.

Silvicultural prescriptions are dependent upon the tree species needs. In general, a prescription of selective harvesting is appropriate for tree species which reproduce by seed and that tolerate shade as seedlings. These types include northern hardwoods. A prescription for thinning, shelterwood harvests and seed tree harvest are appropriate for tree species which reproduce by seed and tolerate moderate shade as seedlings such as white pine or trees species that are overcrowded and not yet ready for regeneration such as oak. A prescription for coppice harvesting or clearcutting are appropriate for tree species which do not easily reproduce by seed and require total sunlight as seedlings such as aspen, jack pine and red pine. Sometimes site preparation and planting are utilized following clearcutting to regenerate species which do not produce adequate seed with jack pine and red pine being the primary plantation trees in northern Wisconsin.

While it is not possible to manage every tree on the forest individually, through the use of silviculture, individual sites can be managed to provide the tree species present with adequate space, light, nutrients, and water. A majority of foresters and landowners utilize sound silviculture to maximize tree health, ensure regeneration of the forest for future generations, and to maximize the resiliency of the forest overall.

Sound forest management is planned and carried out to meet the needs of the tree species desired. Timber harvest are a method to create proper conditions for those trees. Timber products are created by management activities to protect and improve the forest. The resulting income from timber products is utilized by landowners for many reasons including paying the cost of holding and maintaining the land.

It seems that to provide for protection of the forest we must see the Forests for the Trees After All!

The Forestry, Parks and Recreation Spotlight is a weekly article produced by the Langlade County Forestry, Parks and Recreation Department and published in the Wednesday editions of the Antigo Daily Journal. For more information contact Al Murray, Forest Administrator at 715-627-6368 or by e-mail at amurray@co.langlade.wi.us

## Painting Our Way Out of a Corner

Paul Hetzler, ISA Certified Arborist

It's normal to tune out the Chicken Littles (such as yours truly) who run around squawking about this or that invasive forest pest or disease. I mean, how many times can the sky fall, anyway? But the real danger is when we throw up our hands. Thinking we can't make a difference will result in more harm to trees than the pests themselves.

There's a pithy fable about a kid who rescues starfish from the beach after storms, and some busybody informs the kid they can't save all the starfish. The child responds by hurling another starfish into the sea. "Yeah, but I saved that one." Right now, we have a chance to help save oaks from a devastating disease, not by tossing them in the ocean, fortunately, but by adopting some fairly painless and low-cost practices when pruning or removing oaks.

Oak wilt (Bretziella fagacearum), a virulent pathogen first identified in 1944 in Wisconsin, is of unknown origin and is a presumed invasive. It turns lush, healthy red oaks to crispy critters in 2-6 weeks. Tree pathogens don't get much nastier – I suppose one that caused oaks to burst into flames would be worse.

Oak wilt spreads through root grafts as well as spore transfer. Underground tree-to-tree spread, while an important pathway near active outbreaks, is less important than airborne transmission. This latter route is where foresters, arborists, and land owners come in.

Healthy red, black, pin, scarlet, and other red-type oaks succumb in a matter of weeks, while white-type oaks such as bur and swamp-white oaks don't bite the dust as spectacularly, taking 1-2 years to die. After a red-type oak is killed, the pathogen forms mycelial spore pads under the bark, leading to small bark splits. Spore-laden ooze, reported to smell like Juicy Fruit gum, is secreted, which attracts insects, the most significant of which are sap beetles in the family Nitidulidae.

Nitidulid beetles feed on sugars from the sapwood of newly cut or wounded hardwoods. Normally, not a problem, unless the beetles have recently wallowed in disease spores at an oak-wilt spore pad. And these suckers have a flight range of at least a mile. Though spore pads develop mainly on red-type oaks, all oaks can be infected by a spore-covered beetle if it finds a fresh wound during the beetles' flight season.

So, here's the big news: Paint is our friend. From April 1 - July 1, the risk of spreading oak wilt is extreme, and from July 1 - September 30 it's moderate. Exposed fresh wounds on oaks, whether stumps or pruning wounds, puts trees at risk. Never cut oaks, or allow them to be accidentally wounded, from March through September. OK, now stop laughing.

Although it would be ideal not to prune or harvest oaks all spring and summer, it's impossible. The work-around is to paint each wound or stump immediately after cutting. Spray paint is more convenient, but everyone has a few cans of leftover latex paint in the basement, and that will do just fine. Treat wounds right away, as

nitidulid beetles, which have a flight range of several miles, can find fresh oak sap in less than an hour. On pruning wounds, paint the whole thing (Having spent years trying to convince people not to paint wounds, this is hard for me as an arborist). With stumps, only the sapwood needs to be covered.

It would be fair to ask why a stump should be painted. It's because depending on how many root grafts are interconnected with that stump, spores deposited on a fresh-cut stump could infect many nearby oaks through grafts, given that roots extend three times the branch length.

Painting oak stumps and pruning wounds between March 1 and September 30 must become standard practice in the forestry, utility-clearing, and tree-care industries. Oak wilt is not hundreds of miles away. It's as close as the first idiot who brings firewood home from visiting his buddy whose dead tree he helped cut up. Don't move wood long distances!

Here's our chance to hold a very important line. Implementing these strategies will vastly reduce the risk of seeing oaks go the way of the American chestnut. Let's do our part to prove Chicken Little wrong.

*Paul Hetzler is an ISA-Certified Arborist and a former Cornell Cooperative Extension Educator.*



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## Oak Wilt Documents from WHIP

### Oak Wilt Frequently Asked Questions

WHAT IS OAK WILT?

Oak wilt is a serious disease caused by a fungus called Bretziella fagacearum. The fungus grows and plugs the tree's water conducting system, causing the tree to wilt and die. Oak wilt is introduced to an area by sap-feeding beetles that carry oak wilt spores as they travel to feed on fresh oak tree wounds. The disease can also spread to nearby oak trees through interconnected root systems, creating an expanding pocket of dead oak trees. The disease does not spread through soil or air.

MY OAKS ARE HEALTHY- DO I NEED TO WORRY?

Oak wilt can still attack healthy trees. One of the most common ways oaks become injured is through construction damage on the property or an adjacent parcel, so be sure to communicate your concerns to contractors if you are having work done.

HOW CAN I TELL IF MY TREE IS INFECTED?

Leaves will wilt and drop (while still partially green) from the upper canopy first, then the rest of the tree rapidly over several weeks. This happens most commonly in July and August.

WHAT SHOULD I DO IF MY OAK TREE LOST A BRANCH OR GOT INJURED?

If damage occurs or if an oak tree absolutely must be pruned during the early summer, apply tree paint or any kind of paint you have on hand, immediately after the wound is made to prevent the introduction of spores by sap-feeding beetles.

HOW CAN I PROTECT MY OAKS?
Prevention of this disease is the very best approach. The greatest risk of oak wilt transmission occurs in the spring and early summer (April through July), when oak wilt spore-carrying beetles are abundant and fungal mats are fresh. Though ongoing research indicates some success, controlling below-ground spread is difficult since it requires disrupting the movement of the fungus through root grafts from infected trees to healthy trees. For more information on below-ground prevention, contact your DNR forester.

HOW CAN I HELP?
Besides not pruning oaks in early summer, remember not to move firewood at any time of year. Trees that have died of oak wilt will harbor spores for approximately 1 year after death. Moving infected firewood can accidentally spread oak wilt and other invasive insect species long-distances to a previously disease-free area.

MORE INFORMATION:

- The DNR has developed oak harvesting to reduce the introduction and spread of oak wilt. See https://widnr.widen.net/view/pdf/aqszuho7ee/Oak-Harvesting-Guidelines-Web-version---FR-560.pdf
- The DNR oak wilt website has helpful publications for print: https://dnr.wisconsin.gov/topic/foresthealth/oakwilt
- For further assistance, contact your regional DNR Forest Health Specialist: https://dnr.wisconsin.gov/topic/foresthealth/staff

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## Save Pruning of Oaks Until Late Summer To Avoid Risk of Oak Wilt Disease in Northwoods

The Wisconsin Headwaters Invasives Partnership (WHIP) wants to remind landowners, road crews, and contractors to avoid pruning or cutting oaks until the end of July, to protect oak trees from oak wilt disease. Oak wilt has been officially confirmed in the Northwoods, and hotspots this season include St. Germain, Conover, Lincoln, and Sugar Camp.

While spring is a time to dust off yard tools like rakes, shovels and weed clippers, when it comes to the health of oak trees, keeping those chainsaws and trimming tools a safe distance away will ensure that your trees stay healthy for many more spring seasons to come.

“In the spring and early summer, damage to oaks, including pruning wounds, can quickly attract sap beetles that can carry the oak wilt fungus. If a red oak tree becomes infected in the spring it will die by that fall”, said Linda Williams, DNR Forest Health Specialist, Woodruff.

The trees most likely to die from oak wilt infection are in the red oak group, including northern pin oak, northern red oak and black oak. The white oak group is more likely to resist oak wilt, but since much of the oak in the Northwoods is red oak, large percentages of our trees are at risk.

If tree wounds do occur from April thru July, our best defense against oak wilt infection is to paint the wound immediately, if possible within 15 minutes, to protect from the insects that can carry oak wilt. Tree

cuts or wounds are not susceptible to oak wilt after 72 hours. Besides protection from oak wilt, it makes good biological sense to prune in winter anyway, when trees are dormant.

The Wisconsin DNR tells us that as of March 2022, oak wilt has been found in all Wisconsin counties except Ashland, Iron, Taylor, Door, Kewaunee, Calumet and Manitowoc counties. Since the Northwoods still contains a highest abundance of healthy and productive oak forests, taking recommended precautions will help keep them that way for years to come. Check with your municipality to find out if they have oak wilt ordinances that you should follow as well.

Oak wilt and other diseases move easily on or in firewood year-round, so keeping firewood local or purchasing Wisconsin-certified firewood is another critical component of protecting trees and maintaining healthy forests.

More information is available online on the DNR's oak wilt webpage, including a recently released video on oak wilt, and a new fact sheet: https://dnr.wisconsin.gov/topic/foresthealth/oakwilt

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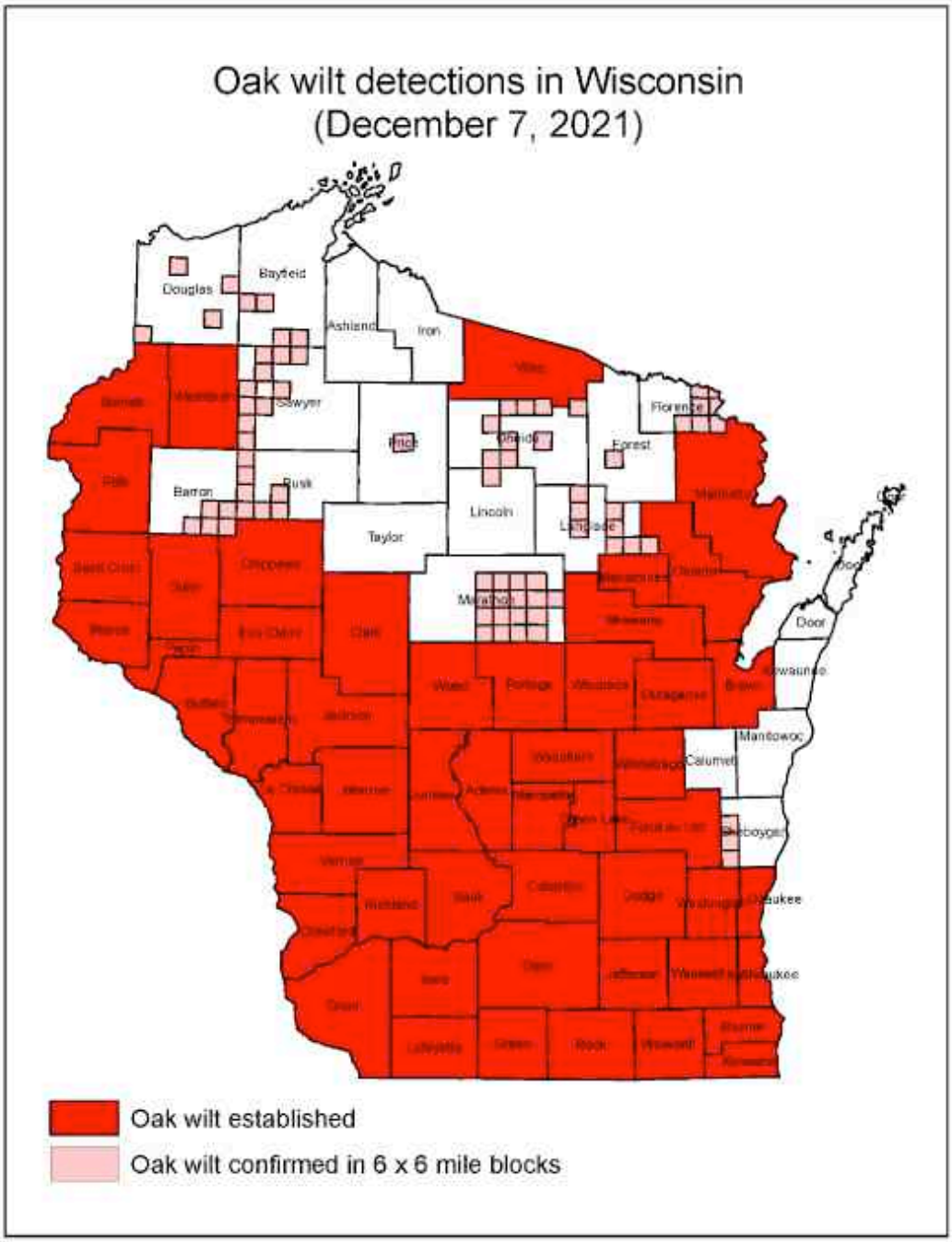
## Oak Wilt in Wisconsin Forests

**For more information about oak wilt, please visit DNR website** https://bit.ly/WIOakWilt

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*In February we shared a Paul Smith article on the wolf controversy. We are pleased to share comment by Rich Miller.*

That was a great article. It forced me to add a few of my own thoughts.

Unfortunately, wolves have been badly maligned by story book stories that are adopted by children and retained all their lives. In addition, Hollywood movies have captured what a starving wolf can do in a rare situation and this is reinforced by a hunting lobby to justify more killing. No thought is given to the real facts. All dogs have come from wolves. A wolf is one of the most intelligent animals walking the earth. We do not stop and realize this fact. They do not breed on a wholesale basis like some humans do because their hormones drive them to keep on breeding even when there is no money to buy food so or to realize the cost of raising a child properly today. Only one pair in a wolf pack breeds and only when there is sufficient food to do so.

Wolves need forest land and seclusion to survive. Forest land is disappearing at a rapid pace today due to human migration to small towns and destruction of forest land from fragmentation.

We forget we are an animal species too. Our sheer numbers have resulted in severe pollution and contamination. People flock to Alaska today to see the last wilderness before it disappears. We do not own the Planet Earth! We share it with all the other species too. Our companion dogs come from wolves and they add so much to our lives

Many of us are trying to preserve some of our forest land before it disappears and to provide habitat for wildlife. Trees and forest purify the air we need to breath to live. They remove a lot of the CO gases which threaten all of us.

The history of mankind is both good and bad. We have killed one another throughout the centuries because of religious wars and political wars.

We are rational animals according to our biologists and philosophers. We need to share properly with every species on planet earth.

*And another comment on the topic was a common representation of the responses.*

I hunt grouse and ducks but frankly think wolf hunting is just killing. 17000 deer were killed on WI roads last year. Open season on unlucky drivers? Sure. Protect yourself or your dog. Otherwise seems like blood-sport? Ivan

** PIF welcomes rational comments or rebuttal to stories we print.*

*However, recently the comment line in a renewal card accused us of perpetuating a lie, without any facts or evidence. Using the F word, we were told that human induced climate change is a lie. We welcome a discussion on the matter, if anyone has fact, science-based evidence to share respectfully we are happy to expose such.*

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## Wisconsin DNR Forestry News

External news articles from the Wisconsin DNR – Division of Forestry

### Climate Impacts on Forest Insects

Climate change may impact forest insects in a variety of ways that will likely put stress on the forest. Warmer temperatures, altered precipitation patterns, more frequent extreme weather events and longer growing seasons are a few consequences of climate change that may shape the effects of insects in future forests. A changing climate may impact insects as:

- Warmer temperatures accelerate larval development and increase insect populations.

- Extended growing seasons allow for more generations of insects each year.
- Altered leaf chemistry modifies insect host plant preferences.
- Extreme weather events damage and stress forests, resulting in attacks by native and non-native insects.
- Warmer temperatures allow insects to expand their range and occupy new areas.

Many examples of insects responding to climate change have already been documented. Two examples are:
1) Mountain pine beetle expanding its geographic range in the western U.S. and infesting a new host tree species during the most recent outbreak; and
2) Eastern larch beetle having an additional generation each year that has resulted in an unprecedented 20-year outbreak in Minnesota.

Wisconsin's Statewide Forest Action Plan highlights some of the impacts insects may have on future forests, as well as potential solutions. The plan notes that forest pests may be more damaging in stressed forests, pest ranges may expand and the impacts of invasive species may increase. The plan has several suggestions to mitigate these impacts. The overarching goal is to manage forests so that they are more resilient and adaptable to climate change. However, forest management may be more difficult. Because of more frequent and severe weather events, management outcomes may be less predictable, opportunities to complete forest management may be limited and current management strategies may need to be adapted or changed.

Despite these challenges, the forest industry can enhance resilience and sustain ecological function by increasing species and genetic diversity, maintaining and expanding forest lands and keeping forests connected. It is critical that all forest landowners (private, tribal, state, county, federal) work together to achieve these goals. Working together to achieve healthy, resilient forests is critical to mitigating the impacts of climate change on Wisconsin's forests and forest economy.

## Statewide Forest Action Plan Strategies

Forest health experts from federal and state government, tribes and universities worked together to create the two goals and numerous strategies featured in the forest health chapter of Wisconsin's 2020-2030 Statewide Forest Action Plan. Many goals and strategies in other chapters are also relevant to forest health efforts.

These goals are high-level statements about the desired future conditions of Wisconsin forests. The forest health chapter goals are:

1. Forested land and ecosystem functions are maximized, while losses due to forest health threats are minimized
2. Forest health threats are identified and managed in a fashion that is adaptive and responsive to multiple values

Strategies are specific areas of effort or action intended to achieve a goal. The strategies highlight the need to establish as many acres of healthy forest as possible to fight climate change, support the forest products industry and provide clean air and water and improve aesthetics and recreation opportunities. This can be accomplished by having diverse forests managed to reduce the impacts of invasive and non-native species. Forests on all land ownerships, federal, tribal, state, county and private, are critical to achieve the goals. The forestry community also needs to educate and work with the public to rapidly identify and manage invasive species. Promoting forest management plans and incentivizing action are also important steps to achieving these goals.

Other goals further highlight the need for connected urban and rural forests that are diverse and resilient to fire, climate change and other stressors. In addition, all forest landowners should become more connected and actively engaged in sustainable management supported by science.

For more information, see Wisconsin's Forest Action Plan summary goals and strategies document.

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*Not more on climate change!*

## True and False

by Paul Hetzler

Scientist-like persons hired by the fossil fuel industry have long maintained we should celebrate an ever-increasing level of carbon dioxide in our atmosphere. This gas, a key building block in the photosynthetic process, can enable plants to grow faster and get larger. It's been called the "$CO_2$ fertilization effect." Many crop yields are projected to increase. And bigger woody plants, the reasoning goes, can amass more carbon, thus helping to slow the rate of $CO_2$ increase in a handy negative-feedback loop.

In other words, they argue that climate change is good for plants, which in turn will help curb climate change. It's an elegant win-win situation, and environmentalists no longer have to lose sleep over skyrocketing carbon dioxide. However, as with many supposed "truths," this argument falls apart upon close examination.

It's like in 1981 when former President Ronald Reagan said "Trees cause more air pollution than automobiles do." He was referring to terpenols (responsible for the pleasant piney-woods aroma in the forest), which can react with auto emissions to form ozone. In the larger picture, trees reduce air pollution of all sorts – and sequester carbon as well – on a colossal scale worldwide. His statement was "true" in a minor, technical sense for a single pollutant, but it was misleading, and for all intents and purposes, false.

In a similar vein, climate-change apologists have a kernel of truth here. Around 95% of plants on Earth can take advantage of more abundant carbon dioxide. In greenhouse trials, plants did indeed get larger when more $CO_2$ was pumped in. This would suggest that most food crops, with the exception of millet, sorghum, and a handful of others unable to use extra $CO_2$, will be larger and possibly mature more quickly. Hooray! So far, so good for the petroleum lobby.

Unfortunately, as $CO_2$ levels increase, the nutritional value of our food goes down the toilet. Dr. Samuel Myers, a Harvard University principal research scientist in environmental health, lays it out bluntly in a January 28, 2018 Scientific American article entitled "Ask the Experts: Does Rising $CO_2$ Benefit Plants?" According to Dr. Myers, "We know unequivocally that when you grow food at elevated $CO_2$ levels in fields, it becomes less nutritious…[food crops] lose significant amounts of iron and zinc—and grains [also] lose protein."

While this correlation is well-established, it is not yet known just why nutrient leaching of crops happens as $CO_2$ spikes. Dr. Myers and his team assert that if atmospheric carbon dioxide reaches the predicted concentration of 550 parts per million by 2050, the nutritional value of major food staples could drop low enough to cause widespread health effects.

He estimates that 300 million to 350 million more people, mainly in food-insecure regions, will become protein-deficient by mid-century as a result of crops' diminished quality. In addition, as many as 1.4 billion women and small children will suffer anemia due to iron-depleted crops, all thanks to the highly touted $CO_2$ fertilizer effect.

Another well-documented and equally mysterious plant response to a profusion of carbon dioxide in the air is that plant leaves across all species thicken. The "fat-leaf effect" would be a mere curiosity, except that the thicker a plant's leaves get, the less carbon it is able to sequester. Oops.

On October 1, 2018, scientists at the University of Washington published a study on this phenomenon in the journal Global Biogeochemical Cycles. The researchers combined their previous leaf-thickness measurements on plants grown in elevated-$CO_2$ chambers with current global climate models. They calculate that beyond 2050, the world's forests will have lost the capacity to store roughly 6.4 billion tons of carbon dioxide each year. To put it in perspective, that's about one-fifth of yearly worldwide carbon emissions from fossil-fuel burning. A weakened forest "carbon sink" needs to be incorporated into future climate modeling, say the University of Washington team who carried out the study.

To throw another wet blanket on the rosy spin some would put on rising $CO_2$, weather extremes become more common and intense as global temperatures shoot upwards. Floods, droughts, and even extended hot spells all strain our food supply. Plus, the $CO_2$

fertilizer effect appears to be self-limiting. Exactly to what extent it can boost plant growth, though, is ultimately not known.

A somewhat related sidebar is that poison ivy seems especially good at using extra carbon dioxide to grow bigger faster. Not only that, it has recently come to light that its toxic urushiol oil gets increasingly potent as $CO_2$ numbers climb. I'm itching to find out if this unpleasant side effect of climate change helps convince a few oil-patch advocates to change sides.

*Paul Hetzler is a former Cornell Cooperative Extension Educator. To help the planet, he tries not to exhale.*



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## Plan for a Better Spring

by Paul Hetzler

Looking for a way to enhance property value, save energy costs, boost mental health, and help the planet in one simple, low-cost step? Yeah, me too. Let me know if you think of something.

Seriously, though, a few well-placed trees in one's yard typically add at least 5% to a property's value. Having large older specimens (of trees, I mean) around the house can push that figure close to 20%. In terms of energy savings, deciduous trees on the southern and western sides of a house tend to slash cooling costs by roughly one-quarter.

Trees enrich our lives in subtle ways too. We recover from surgeries and illnesses more rapidly if there are trees in view out our window. Crime rates drop when neighborhoods are planted with trees. Plus, lying under trees might cure acne. OK, not sure on that one.

Giving genuine thought to site and species selection is critical to the long-term survival of landscape trees, and right now is an ideal time to plan for success. Any given location will be great for some trees, yet awful for others. Poor drainage, exposure to deicing salt, restricted root area, overhead wires, and shade are but a few possible constraints. Any these attributes alone can lead to the decline and eventual death of certain trees.

On the other hand, that there are species and cultivars able to mature and thrive no matter what limitations a site has. "Right tree, right place" is an arborist mantra. We have others, like "please clean the dog poop before I come look at your tree," but I digress. The point is that sometimes you shouldn't plant that mountain ash, birch clump, or crabapple right where you had in mind. But somewhere else on the property could be perfect. If you only have one available site, there are always plenty of great selections able to live long and prosper there.

One of my favorite resources on landscape tree selection is a free booklet published by Cornell University's Urban Horticulture Institute, and written largely by Dr. Nina Bassuk, whose work is universally esteemed by arborists. You can get the download at http://www.hort.cornell.edu/uhi/outreach/recurbtree/pdfs/~recurbtrees.pdf No, I'm not at all biased – why do you ask?

Given our long winters, it's good to have trees with off-season aesthetic interest. Here are just a few ideas:

- Hawthorns are salt-tolerant native trees maturing at around 20'; good for under utility lines. 'Winter King' has copious persistent fruit that look great in winter and provide bird food.
- River birch are medium-large trees with attractive and unusual pinkish-white exfoliating bark. 'Heritage' is resistant to many pests and diseases.
- Kentucky coffeetrees are tall and drought-tolerant, with few pests or diseases. Their coarse-textured branches produce a striking winter effect.
- For spacious sites, bur oak has twisting branches with corky wings. A bur oak silhouette in winter is breathtaking. Especially if it's real cold. These massive trees tolerate both drought and intermittent flooding, and can live hundreds of years.

*ISA-Certified Arborist Paul Hetzler is a former Cornell Cooperative Extension educator. He's looking for new mantras.*

"Every unseen or unlikely connection between the natural world and human survival has assured me that we have very little grasp of all that we depend on for our lives," Dr. Beresford-Kroeger wrote in her most recent book, "To Speak for the Trees." "When destroying a forest, we only understand a small portion of what we're choosing to destroy." People, she said, should look at forests as "the sacred center of being." "Without trees, we could not survive," she said. "The trees laid the path for the human soul."

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## **From Our Living Ancestors** (Gone with the wind)

Thanks to John Bates

Located in Sawyer County within the Flambeau River State Forest (T37N- R3W, Sections 5, 6, 8), this is, unfortunately, a very confusing site to access, because there is no signage whatsoever here. An old forest road leads west from a parking area on Carlson Road. Another old, unmaintained forest road is hard to see, but is about 200 yards north from the gate on a bend of Carlson Road, and leads northwest into the site. Several old, unmaintained forest roads intersect with this route, so a good map and GPS are highly recommended if you want to explore the area without getting lost.

Prior to 1977, the "Big Block," or what is now known as the Flambeau River Hardwood Forest State Natural Area, was the state's finest remnant of old-growth northern mesic forest, a stand dominated by 250- to 400-year-old trees. Designated in 1952 as a State Scientific Area, and later as a National Natural Landmark, the original 1052-hectare (2,600 acres) Big Block was one of only a handful of large tracts of old-growth hemlock-hardwood forests remaining in the upper Great Lakes region. Nearly two-thirds of the overstory was dominated by eastern hemlock, with smaller amounts of yellow birch, sugar maple, and basswood, along with some super-canopy white pine.

Conservationists and lumber interests vied for control of the area in the 1940s, but it was the wind that had the last say. Four consecutive years of major blowdowns swept through the area beginning on October 10, 1949, when winds up to 100 m.p.h. mauled much of the Big Block, most of which were school trust lands owned by the Land Commission, or what is known today as the Board of Commissioners of Public Lands. An estimated three million board feet of timber was laid flat, and salvage sales and operations were quickly undertaken. Then, on May 5, 1950, another gale knocked down 1.5 million board feet, which was added to the previous sales.

The next spring, concern for the potential impacts of salvage operations and a proposed further selective cut led numerous conservation organizations to lobby for a stoppage of the cut. The Wisconsin legislature agreed, and directed the Conservation Department to purchase nearly all of the Land Commission lands in the Big Block, as well as an additional 216 acres of old-growth, for $457,000. The transaction took place in late June 1951, with the intention of the Conservation Department to keep the Big Block intact and managed as a wilderness area.

Just over a week later, on July 7, 1951, another windstorm hit, ripping completely through the mile-wide Big Block in one place, destroying a nearby heron rookery, dropping trees on top of the cut- and stacked logs from the previous blowdowns, and ultimately destroying another 5 million board feet, 2 million of which was in the Big Block. Many trees were twisted "so the fibers opened up like so many pieces of raveled rope... [and] 'widow-makers were so thick that they practically created a canopy.'"

The 1951 storm effectively destroyed the dream of conservationists to have one large, intact old-growth stand left in the state, and, in September, 360 acres of the Big Block were set aside as a Scientific Area on which no cutting or salvage would be done, while the rest would be salvaged. In October, an additional 280 acres were added to the scientific area, bringing it to 640 acres, or one mile square.

Then during a four-day period beginning June 24, 1952, severe winds blew down another estimated 3 million board feet, including a great number of the trees in the newly added 280-acre parcel. The damage was deemed so significant that the 280 acres were quickly withdrawn from the Scientific Area and salvage operations begun.

The four years of blowdowns ultimately knocked down over 12 million board feet of timber, and perhaps more importantly, severely impacted Wisconsin's finest example of pre-settlement forest.

Wisconsin's Scientific Areas Preservation Council helped to draw up a management plan for the remaining 360-acre scientific area, which was put in place in 1953, stating that no roads would occur within the area, no planting or cutting would be done for any purpose, and no removal of dying, dead, or down trees could occur unless the area was destroyed by fire.

In the aftermath, large deer populations took up residence and were thought to be the main cause for the elimination of most of the hemlock regeneration in the area. So, in 1968, a 150-acre parcel of the Scientific Area was fenced to exclude deer.

And then a decade later came the wind's coup-de-grâce: a series of extraordinary downbursts hit the area on July 4, 1977, and felled the entire stand except for a few large trees along the Flambeau River. Twenty-five separate downburst episodes struck, following a path 166 miles long and up to 17 miles wide. Within the estimated 60,000 acres of forest that were leveled in the Flambeau River State Forest, lay the Big Block. Two years after the blowdown, only 11% of the total trees in the stand remained.

The storm, however, provided a unique opportunity to study the role of natural disasters within natural ecosystems. The site has now become important for education and research, especially for the study of regeneration of old-growth forest following a natural disturbance. Tip-up mounds and pits, insect population dynamics, and salvage/no-salvage techniques have been studied. The young forest is now composed of sugar maple, yellow birch, and basswood, while the hemlocks have mostly disappeared. Small deer and snowshoe hare exclosures were constructed in both salvaged and un-salvaged portions of the natural area in 1982, but were maintained for study purposes for only some 15 years—they can still be seen, but are largely destroyed.

The original scientific area boundary was significantly modified again, removing areas that were salvaged following the 1977 windstorm. Salvaged portions of the original State Natural Area have been incorporated into the "Big Block Forest Production Area," with special considerations given to existing long-term research plots established to compare salvaged and un-salvaged portions of the Big Block.

Today, the now 266-acre Flambeau River Hardwood Forest SNA comprises the only non-salvaged portions of the original "Big Block." This SNA is contained within the Flambeau River Hardwood Forest Native Community Management Area, and will continue to be passively managed, though it's now mostly a 45-year- old forest comprised of maples and aspen, with areas of red oak, basswood, yellow birch, maple, ash, cherry, and elm. Relict mature forest, including large-diameter white pine, occurs in tiny patches, particularly near the river. Hemlock does not appear to be successfully reproducing in the SNA, in the rest of the FRSF, or in surrounding areas.

*A Gaylord Nelson supporter standing in the Flambeau tract in 1962*

Note: evidence of the 1977 blowdown is not dramatic to the untrained eye, so the average hiker will experience what to them is simply a young forest. The very few patches of ancient trees left standing are not mapped for the public, and a challenge to try to find—look close to the river.

# Old is the New Young

By Paul Hetzler

Typically, “tree aging” is done by counting annual growth rings, either on a stump or on a sample core taken by a special tool. But the phrase can also refer to veteranization, a process whereby trees are prematurely aged through targeted injury and stress in order to make specialized habitats. It’s much like the ageing of parents, a treatment administered by one’s children to produce worry lines and grey hairs.

We humans whistle past the cemetery, as it were, with refrains like “40 is the new 30,” apparently hoping to trick death into giving us a free decade somewhere along the line. For trees, there is no single definition of old. A mountain-ash is decrepit by fifty, while a bur oak of that age is a mere adolescent. Every species has a lifespan range beyond which no amount of wishful thinking or supplements can help.

Among long-lived trees such as hard maple, oaks, hickories, and white pine, veterans which are past their prime and beset with internal decay from lightning strikes, logging injuries or storm damage may still have centuries of life remaining. They are of little commercial value, though, and standard forest-management norms would dictate that they be removed. Yet those sylvan elders play a unique and essential role in the ecosystem.

Flying squirrels love to nest in mid-size branch or trunk cavities, and I’ve seen large trees which have clearly sheltered many generations of porcupines. Raccoons are just as likely to den inside a spacious cavity, and even black bears have been known to squeeze into a hollow tree for the winter. Bats often roost inside “defective” old trees, and many cavity-nesting bird species require trees with rooms in their hearts.

But just as importantly, trees in their senescent years are crucial to the survival of myriad insects, most of which are pollinators, and all of which are important food for wildlife. Our planet is in the midst of a precipitous die-off of arthropods. In Denmark, for example, insects have declined by 97% in the past 30 years. In the UK, biologists documented 2,000 insect species that live exclusively inside ancient trees. Some of these insects are now only found at two or three sites on Earth.

Even decay fungi can be specific to the heartwood of a particular kind of tree. Fungi have given us cancer treatments, antibiotics and more, yet humans have only begun to catalog the health benefits of fungal species.

But ancient trees are vanishing. Exotic pests and diseases have decimated some of eastern North America’s largest and longest-lived species: American chestnuts have been all but extirpated by chestnut blight, and while Dutch elm disease hasn’t entirely purged our native elms, the leviathans of old are gone. Beech bark disease, butternut canker and the emerald ash borer, grim reapers all, continue to march through our forests.

In addition, more frequent droughts exact a greater toll on elder trees, which are less resilient than youngsters. The trend toward vast agricultural fields has destroyed millions of tree-lined fencerows, and transformed countless acres of forested wetlands into cropland. And in some places, it is now common practice to raze whole forests and chip trees of all sizes and ages.

It has long been known that damaging a few trees in a forest can benefit endangered species. In the late 1980s, a friend of mine worked for the US Forest Service out West, dynamiting the tops out of Sitka spruce to make nesting sites for northern spotted owls.

But modifying young trees to replicate the conditions found in forest elders has not been tried on a large scale until recently.

In 2012, Ancients of the Future, an ambitious project involving several UK-based nonprofit nature groups, was launched. On the twenty different sites in England, Norway and Sweden that were chosen, biologists "surgically" harmed 874 oak and beech trees to mimic natural events such as lightning strikes, wind breakage, and woodpecker damage.

In some cases, fungal samples taken from veteran trees were transferred to trees in the study. This may help preserve unique fungal strains. Curiously, there is evidence that decay fungi inside old trees can actually help prolong their life. Kind of like fecal transplants for humans, I guess.

Although a final evaluation of the Ancients of the Future project is planned for 2037, an interim assessment and report were made in 2020. The full text is available at file:///C:/Users/megar/Downloads/BengtssonWheater2021_TheeffectsofveteranisationofQuercusroburaftereightyears.pdf.

Researchers found that many of the artificial cavities they made are now home to bats, birds, and mammals. Tree mortality was much lower than anticipated, but it seems that in a lot of instances, biologists were too gentle with their chainsaws, as trees had callused or "healed" over some of the openings. But most if not all of the fungal inoculations had taken hold, a good sign for purposes of the experiment.

Veteranization of healthy trees may not be practical everywhere. At the very least, though, landowners should do all they can to protect hollow, decaying, or otherwise "flawed" old trees as long as possible. Increasingly, the natural features we judge as useless or unsightly are found to be vital in ways we never imagined. In light of this fact, I'm going to let my eyebrows grow wild in case the shelter they provide ends up rescuing some tiny butterfly from extinction.

Paul Hetzler is a certified arborist and a former Cornell Cooperative Extension Educator.



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