

"This institution is an equal opportunity provider."



# Partners News

APRIL 2024

*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.*

## CELEBRATE FOREST CONSERVATION THIS SPRING

### Inside this issue:

#### Contact Us

Partners in Forestry  
Landowner Cooperative  
6063 Baker Lake Road  
Conover, WI 54519  
[partnersinforesstry@gmail.com](mailto:partnersinforesstry@gmail.com)  
715-479-8528

#### PIF Board

Joe Hovel  
Jim Joyce  
Joe Koehler  
Charlie Mitchell  
Margo Popovich  
John Schwarzmann  
Rod Sharka  
Richard Steffes

*Have you paid  
your PIF dues?*

Wildcat Falls Photo and Comment.....	2
Joe Hovel’s Response to a Letter Printed in The Vilas County News .....	2
Congratulations to Vilas County Forest .....	3
Warmest Winter .....	5
Pelican River Statement from the Conservation Fund .....	6
PIF Afterthought on Pelican River and Forest Legacy .....	6
Forest News - Global Crisis from Invasive Pests .....	7
Think Snow - Gardens and Forests Need It .....	8
In Praise of Messiness in the Yard - For the Pollinators .....	10
Wood Working for Conservation, in Celebration of Vital Conservation Programs.....	11
Disturbing ECO-NEWS Outside Our Area.....	13
Wood to the Rescue: Two Stories.....	14
Poorly Thought-out WI Legislation Averted .....	15
Moving Trees to the North to Save the Forests .....	17
Boundary Road Trails.....	21



### The ever-popular Wildcat Falls Community Forest is a local treasure

Sue, a PIF member, shared this photo with a nice note. "Just want you to know how much my daughter and I appreciated Wildcat Falls yesterday, and all your energy that went into the project. Here are a couple of photos." We appreciate hearing from visitors and receiving these types of comments. Wildcat Falls is a special place in all seasons. The Community Forest Program which made this project possible (and Headwaters Cedar) is an incredible asset to us all. The program has become increasingly competitive and deserves increased funding. PIF is working to try to accomplish that.

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### Joe Hovel's Response to a Letter Printed in The Vilas County News

*A letter in the Vilas County News paper riled up Joe, and here we share his response. The original letter had false assertions that the 30x30 movement was a federal government land grab. We must refute these nonsensical conspiracy-based lies and share the benefits of these conservation programs!*

Dear Editor,

The devious Federal Land Grab assertion of Tom Ward is untrue and furthers divisiveness. However it is reminiscent of recent misinformation spewed by the extremist American Stewards of Liberty, a Texas group created to oppose paying cattle grazing fees on public lands.

First off, 30x30 has little to do with federal ownership or excluding people, as stated in Tom's letter. Rather than a federal land grab to harm people, 30x30 is a worldwide initiative embraced by the Biden administration, encouraging voluntary tools to assist in creating more outdoor opportunities through increased public access. Focus includes: Conserve America's lands and waters for the benefit of all people by increasing access for outdoor recreation while protecting fish & wildlife habitat, honor private

property rights, support and reward the voluntary stewardship efforts of private landowners, support tribal conservation and restoration priorities, create jobs by investing in restoration and resilience for healthy communities, support locally designed & led conservation efforts, use science as a guide and pursue a collaborative approach to conservation by building on existing strategies emphasizing flexibility and adaptation.

Much of this is well underway with decades of bipartisan support. Area residents and visitors alike benefit greatly from conservation programs such as Forest Legacy, Community Forest, Knowles Nelson Stewardship, NRCS landowner incentive programs, our very own Vilas County Forest as well as the voluntary efforts of numerous area forestland owners. Together with our state and national forests, these programs represent the future health of our communities through the economic, environmental, social and intrinsic services provided to us all.

I manage over 3300 acres of forestland in the region. Most of it is linked to a voluntary conservation program representative of 30x30 and much has permanent public access through the Forest Legacy Program. In accomplishing this, we proudly exercised our private property rights to see land conserved for the benefit of others as well as the flora & fauna. I can assure you, the gratification of recognizing the common good far exceeds that of embracing any farfetched ideology furthering divisiveness. When I meet folks visiting these lands, I never see ideology or divisiveness—I see folks grateful they have the open space to hike, hunt, ski, fish and recreate.

If we want to keep our heads out of the sand, as in Tom’s ostrich scenario, we must be informed. In 2021, 23 species in the USA were removed from the Endangered Species List, not because they recovered, but because they were extirpated-gone forever. Widely recognized by science as the bio-diversity crisis, this is symptomatic of our current challenges.

We can collaboratively work to assure the health of future generations, or we can ignore a problem by focusing on misinformation. We can make a positive difference, and how significant a difference is often up to us. But as Pope Francis recently stated “We must end this senseless war against Creation”.

Joe Hovel

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### **Congratulations to the Vilas County Forest**

On March 26, 2024, the Vilas County board of supervisors voted to acquire the 350+ acre tract we wrote about in January. The transaction took place on March 28. This parcel has great connectivity to existing county forest lands. We applaud the Vilas County Forest Administrator Chad Keranen for sticking with this effort through all the ups and downs of accomplishing a good addition to the forest, for all to enjoy. The parcel has miles of foot trails and should be a valuable hunting, hiking spot near the density of Buckatabon Lake. The parcel lies in two towns: 328 acres in Plum Lake and 35 acres in Conover.

Both towns approved supporting resolutions, and the County Board vote had no objection. We thank the Vilas County board for realizing the value of this acquisition and trust the Joint Committee on Finance will recognize this important benefit. To see a timely resolve to this, a bit of creativity was needed. The Knowles Nelson Stewardship grant of \$394,000 was earlier approved by WDNR for 50% of the lower of two appraisals and will reimburse the share of acquisition cost.

\$1,096,205 total cost was justified by the higher of two appraisals. County Land Sale Fund 250 will cover \$225,000, ARPA grant funding through the American Rescue Plan covers \$276,215 and the general funds

investment of \$594,987 will be paid back within 24 months by the K-N Stewardship grant (thus the importance of the Joint Finance approval) and additional timber sale revenues.

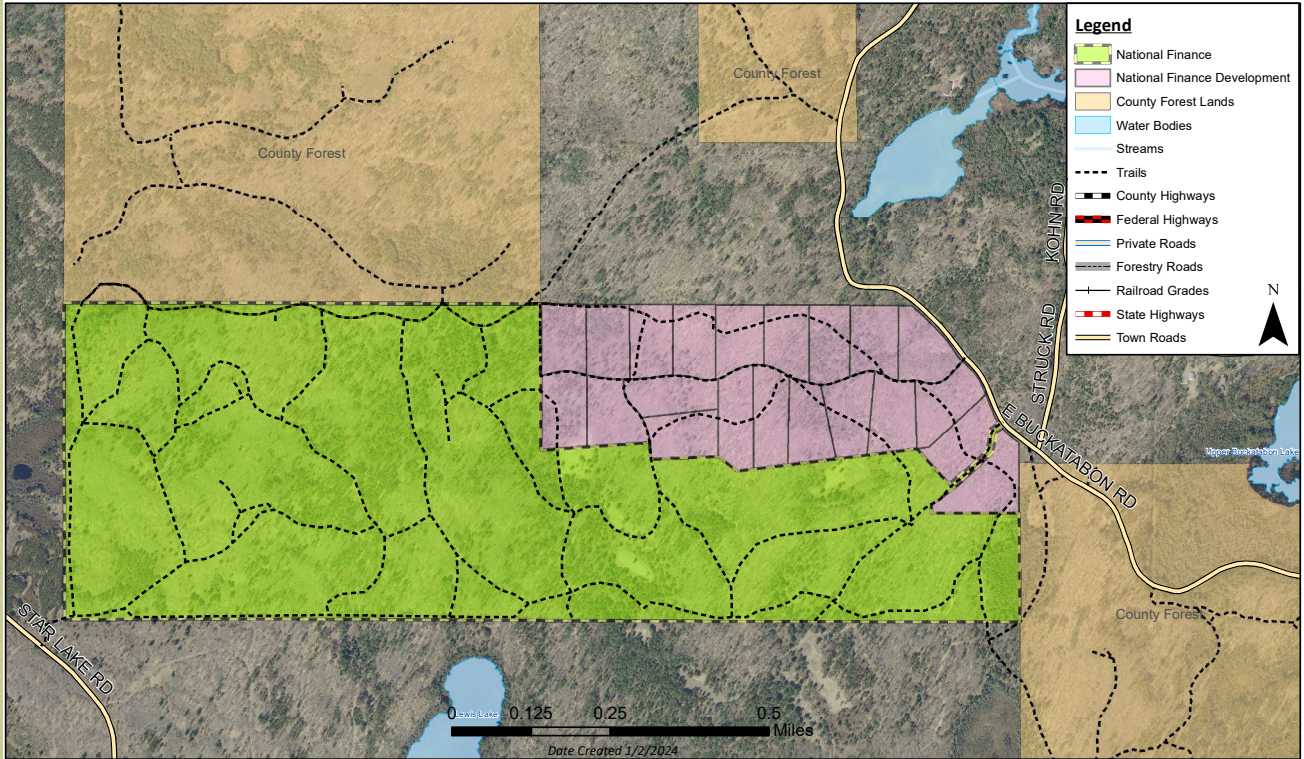
The County Forest Program is a tremendous asset to rural Wisconsin, and we are pleased to see locally controlled public lands expanding.



### Vilas County Land Acquisition Town of Plum Lake & Conover T41N-R9E - sec. 29, 28, and 27

Vilas County Forestry, Recreation & Land Department  
2112 N. Railroad Street, Eagle River, WI 54521  
Mail: 330 Court St., Eagle River, WI 54521  
715-479-5160

Town of Plum Lake - 322  
Town of Conover - 35  
Total Acres - 357 acres



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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

### WARMEST WINTER

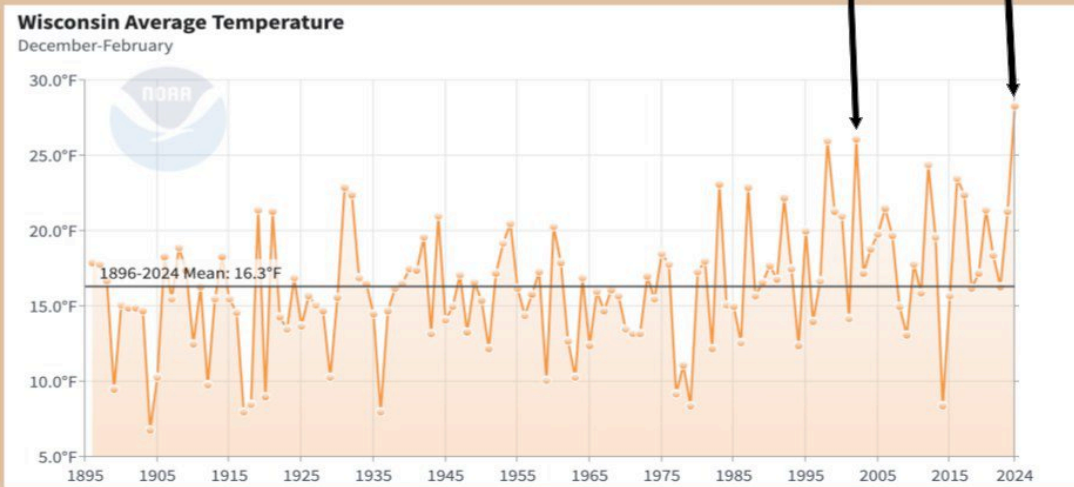
Fortunately, some snow and rain arrived in northern Wisconsin as the Holy Week of Easter neared. This was badly needed as we were in severe fire danger very early this year.

A shocking lack of winter this year is confirmed by the WI State Climatology Office as being the warmest three-month period on record. I was told that a recent story claimed the winter of 1913 was the warmest on record until now in Vilas County, but this graph demonstrates 20 winters warmer than 1913 statewide, thus I am skeptical of that claim.

Wisconsin just experienced its *warmest winter on record!*

Statewide Average Temperature (Dec '23-Feb '24): 28.3°F

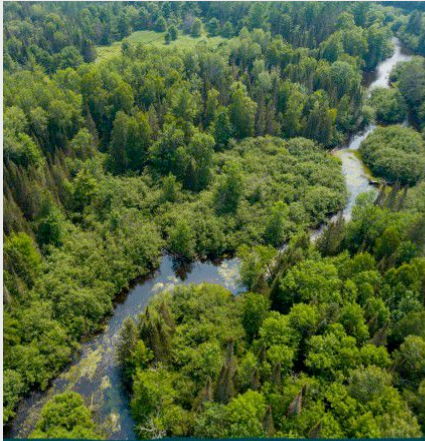
Previous Record (Dec '01-Feb '02): 26.1°F



Wisconsin State Climatology Office  
NELSON INSTITUTE FOR ENVIRONMENTAL STUDIES  
UNIVERSITY OF WISCONSIN-MADISON

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## Pelican River statement from the Conservation Fund



# Thank You!

On behalf of the entire team at The Conservation Fund, we send our heartfelt thanks to you for playing a vital role in completing the conservation of the Pelican River Forest! This historic conservation effort is the culmination of years of hard work, persistence and teamwork. Together, we achieved what some thought to be unachievable!

We are immensely grateful to you for your support, especially for taking extraordinary steps to challenge the rampant misinformation that circulated within your community and across Wisconsin. Your presence at public meetings energized us and reminded us why it was so important for this project to succeed.

In time, we hope that those who spoke against this project or were influenced by its detractors will come to understand the value of keeping Pelican River Forest intact so that the land's intrinsic values can continue to provide so many benefits – economic, recreational, climate, water quality and wildlife habitat – for generations to come.

Fifty years from now, no one will remember the controversy, but everyone will appreciate that Pelican River Forest still stands tall. Thank you.

– Clint & Bethany

## PIF afterthoughts on Pelican River Forest and Forest Legacy

by Joe Hovel

The Pelican River project was completed. Many of us are grateful for that. But also we remain puzzled by the base of opposition that occurred.

While the opposition certainly was primarily out of the so called ‘conservative’ circles, this is not necessarily a broad based ‘conservative’ idea. Recently I scanned the FY’23 & FY’24 Forest Legacy rankings and found over half of the successful projects were in very conservative states: MT ranked 1 both years, 2<sup>nd</sup> rankings were near by, Pelican in FY ’23, Michigamme Highlands (MI) ’24, then we saw ID, FL, GA, MS (2 projects), AR, SC projects all receive funding in FY’23. In ’24 MS (again), GA (again), IA, AL, NC, UT, SD and ID all were successful in achieving funding, with ID receiving the highest single monetary figure over both FYs. Further research exposed a recent press release from FL governor Ron DeSantis’ office boasting of their recent conservation successes of wetlands, forests, wildlife habitat, waterways and farmland.

Over a decade ago some of us were deeply disappointed when WI state land acquisitions were all but ceased. We had maintained high hopes to see the NHAL State Forest acquire much more land in the Border Lakes area, following the boundary expansion achieved in 2005. We reluctantly saw this as ideology but remained grateful that the conservation easement program through Forest Legacy remained vibrant. To see this attack on Forest Legacy in recent years is disheartening, and must be overcome by citizen demand. Currently, with a funding boost from the Inflation Reduction Act, Forest Legacy is in an enviable position. We want WI to receive a worthy share. We also applaud Michigan DNR and Lyme Timber for the Michigamme Highlands project.

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## Forest News

### **Global crisis from invasive pests.** By Geoff Williams from Knowable magazine

Over a hundred years ago, a tiny worm called the pinewood nematode landed in Japan, hitching a ride on wood products imported from North America. In the United States, native pines are relatively unaffected by the worm. But in Japan, it spread from tree to tree on native beetles, and the forests began wilting and dying.

In the 1980s, the worm spread again, to China and the Korean Peninsula, and in later decades to Portugal and more recently to Spain. Today, countries in Europe are preparing for an onslaught.

The nematode's damage has been massive. To kill the pests, Japan, China and South Korea routinely bombard forests with harsh insecticides, which can also kill pollinators. Even with that, South Korea is losing heritage forests with sacred cultural value. Japan now has to import its prized mushroom, the matsutake, because it requires pine trees to grow.

This isn't an isolated story. The impacts of forest pests are dramatic. In the early 2000s, myrtle rust was introduced to Oceania after being spotted on shipments of eucalyptus from South America; 75 percent of the forested land of Australia is now at risk. A root pathogen that spreads on hikers' boots and dogs' paws is bringing down thousand-year-old kauri trees sacred to the Māori in New Zealand. A wilt disease threatens the sacred 'Ōhi'a lehua flowers in Hawaii. Invasive pathogens are particularly problematic in the low-diversity, intensively cultivated landscapes prevalent in the Southern Hemisphere and Europe.

More than 500 species of plant pathogens and insect herbivores have been brought to North American forests, decimating ash, elm, chestnut, pine, tanoak, hemlock and more, and releasing as much carbon annually as wildfires. The annual cost of invasive species (of all kinds, including plants and animals) in the United States has risen from \$2 billion in the 1960s to more than \$20 billion in the 2010s. A 2023 international report implicated invasive species in 60 percent of all species extinctions.

Covid-19 alerted everyone to the risks and impacts of animal disease pandemics. Plant diseases may yet prove more nefarious in their cascading consequences for the economy and for human and animal health, particularly in a warming climate. We are in the midst of an epic global forest health crisis that demands a global response. Accordingly, the United Nations Convention on Biological Diversity acknowledges the importance of invasive species as drivers of biodiversity loss and lays out recommendations to build capacity and share information to reduce impacts.

Fungi and insects are by their nature small and can easily adapt to new hosts and environments. So, forest pest invasions often go undetected until late in the game. When they *are* detected early, action is often slow because economic incentives are not readily apparent. Consider laurel wilt, which ravaged Florida's forests for years before it struck avocados and policymakers started to pay more attention. Today, Florida's avocado industry has lost more than 300,000 trees to this pest alone.

When pests' cross international borders, the short-term economic benefits of trade often outweigh concerns over longer-term ecological costs. World trade conventions require strong evidence about the threat of specific pests to justify trade restrictions. Such information is seldom available until the problem is out of control. As a result, the world finds itself in a perpetual defensive state against the next big threat.

What can be done? Science can help. For example, researchers have had luck making white pines more resistant to blister rust and chestnuts resistant to chestnut blight, and they are selecting ash trees that are less affected by the emerald ash borer. Yet despite rapid advances in biological

technologies, the invasion of forest pests and their impacts continues to accelerate. Limiting trade to regional partners would greatly reduce both the introduction of invasive pests and fossil fuel emissions, which accelerate the problem through climate change and amplified stress to trees. The pandemic, recent wars and other economic factors have led to a slowdown in global trade. But deglobalization is likely an impractical long-term solution.

No single, quick economic or policy fix can solve the problem. What we need instead is proactive, collective action. The list of what we need to do is long, and often asks nations to set aside specific economic incentives for the greater good. Big changes come through incremental progress.

One of my coauthors of a 2023 article in the [Annual Review of Phytopathology](#), the late Gary Lovett, created and dedicated himself to advocacy for Tree-SMART Trade, a policy framework that proposes practical solutions. These include switching to non-wood packaging material in international shipments; expanding monitoring of pests and responses to them; augmenting biosecurity measures in trade agreements; restricting the import of live relatives of native plants, which might carry pests that transfer easily to these new hosts; and tightening penalties for importers who violate rules. This is a great start.

Finances must be pooled to strengthen pest management, biosecurity and conservation in resource-poor countries, and to adapt those efforts across different cultural and political systems. More work can be done to track where destructive pests originate and how to hold people accountable. Citizen scientists can help by monitoring local trees to spot hints of emerging threats. Most of all, forests should be managed for **resilience** rather than for timber yield or carbon credits.

In the long term, success requires equal representation that leaves no one behind. “International” scientific meetings, literature and research on forest invasive pests are today dominated by representatives from institutions in Europe, North America and English-speaking nations of the Southern Hemisphere (Australia, New Zealand, South Africa) — rather than their Indigenous populations or the rest of the world where English may represent a barrier — resulting in blind spots in scientific knowledge of invasive pests and ideas about their management.

It is time for a serious, proactive international response to the forest health crisis. If we continue to just react to threats as they pop up, biodiversity will continue to suffer.

*Geoff Williams is a plant pathologist and entomologist with the US Forest Service in Lansing, Michigan. The views expressed in this article are his own.*

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*When we received this story from Paul in February, he included a little teaser, as we had no snow and he had plenty to offer it on a first come-first served basis. Fortunately, we have recently received some snow and rain in late March.*

**Think Snow – Gardens and Forests Need It** by Paul Hetzler

In her poem “It Sifts from Leaden Sieves,” Emily Dickinson lauds the sublime beauty of snow – gossamer flakes that garnish a forest, wispy grains that fill road cracks, and wind-sculpted rings of snow around fence posts. Given that the poet lived in a time before cars and stayed in her bedroom for 20 years, she never had to shovel snow, trudge through it, or drive in it. One is less apt to admire “alabaster wool” when the plow wings a mountain of it onto the driveway you just shoveled.

Snow does a lot more than make skiers happy and pedestrians and commuters miserable, of course. In northern latitudes, ecosystems have evolved with winter snow cover, and need it to stay healthy. This is in large part because snow carries with it trace elements crucial to plant life. More importantly, snow contains plant-available forms of nitrogen, a nutrient often in short supply. When snow releases a whole winter’s worth of nutrients in

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the spring, it can make a difference to trees and crops. In fact, snow has been called “the poor person’s fertilizer.” Since air is 78 percent nitrogen (N), you’d think plants would have all they need. But atmospheric nitrogen, N<sub>2</sub>, is a stable, inert molecule that plants are unable to absorb. Lightning can zap nitrogen gas and change it to a plant-friendly form, but this accounts for very little of a plant’s nutrient budget.

The majority of nitrogen used by plants is made by soil bacteria that break apart the N-N bond of gaseous nitrogen, converting it to water-soluble forms that plants can slurp up. Ironically, the process of breaking N<sub>2</sub> is called nitrogen fixing. It’s where the saying, “if it needs breaking, fix it” comes from. OK, maybe that’s not a real saying.

Snow is a better fertilizer today than it was years ago. There’s a great outfit called the National Atmospheric Deposition Program (NADP), which measures stuff that falls out of the sky that isn’t some form of water. According to the NADP, the vast majority of today’s snow-borne nitrogen is from pollution.

Coal-burning power plants and motor vehicles spew out various nitrous oxides, which are not great for us to breathe, but when they get washed into the soil, they act as nitrate fertilizers. Ammonia, another type of plant-available nitrogen, escapes from manure piles and lagoons, as well as from commercial urea-based fertilizers.

So how much fertilizer is in the snowdrifts blanketing the Northeast and Great Lakes regions these days? Because we’re the “beneficiaries” of pollution that drifts from industrialized areas west of us, US, we get more nitrogen in our snow than the rest of the country. If historical averages can be trusted (let’s pretend they can), we get somewhere around 5.5 kilograms of N per acre. Depending on the crop, a farmer may apply on the order of 70 kg of nitrogen per acre, so 5.5 kg is small potatoes. But it’s not chopped liver, either, which is high in nitrogen but not an ideal soil amendment.

Snow-based nitrogen can be a significant boon to ecosystems on marginal soils. In a year with abundant snowfall, maple-sugar bushes, timber lands and pastures benefit from “poor person’s fertilizer.” Snow brings a fair bit of sulfur, an essential plant nutrient. It can make soils more acidic, too, so let’s call it a mixed blessing.

We depend on the moisture from snow as well. In most years, the snow melts gradually, with nearly all the moisture going into the soil. This gentle percolation is in contrast to summer rains, a percentage of which – sometimes a large portion – runs off and doesn’t benefit the soil.

When topsoil is saturated, or as agronomists say, “at field capacity,” excess water seeps down through the soil profile. Eventually it becomes groundwater, raising the water table and recharging our aquifers. Most water wells in the Northeast tap into unconfined aquifers. Water that goes into the ground in a given location is the water that comes out of the well there. Such aquifers depend on snowmelt, as well as prolonged heavy rains of spring and fall, for recharge.

Unfortunately, this historical pattern may not hold. In spite of record cold out West in January 2024, winters are getting warmer and shorter, thanks to climate change. Winter is actually heating up faster than any other season. Without a significant snow pack, the groundwater recharge we always get in the spring will diminish. And when some of winter’s precipitation falls as rain, nutrients will run off while plants are dormant, and thus be lost to those ecosystems.

Those who work in field and forest should take heart at the mounting snowbanks, not despair of them. Now if you’ll excuse me, I’m headed to the garden with the rototiller to plow up some snow. I’m pretty sure I have a packet of Mixed Frozen Vegetables seeds around here somewhere.

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*Paul Hetzler, a former Cornell Cooperative Extension educator, writes about nature for The Saturday Evening Post.*

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## In Praise of Messiness in the Yard -for the pollinators..... also by Paul

Claims that cleanliness is next to godliness have yet to be proven by science, but research does indicate that neat, well-coiffed landscapes are terrible for pollinators. As landscapes become neater and less diverse, wild bees can't get enough natural foods to keep them in the neighborhood for the few weeks of the year that we'd like them to wallow around in our apple or cucumber flowers. In highly manipulated environments like the vast almond groves of California, and the sad, sterile lawns of North American suburbia, imported honey bees may be the only available pollinators.

With all due respect to honey bees, they're seldom required to produce fruits and vegetables. The fact is that wild bees, along with other insects and the odd vertebrate here and there, do a bang-up job pollinating our crops, provided there are enough types of wild plants (i.e., messiness) around to keep them happy for the rest of the season.

Of the estimated 400 wild bee species in Canada, 110 have been cataloged visiting apple blossoms in commercial orchards. In nearly all orchards studied, honey bees had no bearing on pollination rates. My object is not to malign honey bees, but to point out that if we learn to live with a bit more "messiness," we'll improve the health of wild bees, wildflowers, food crops, and ourselves in the process.

Enhancing the entropy on one's property is as easy as falling off a log (which of course is a perfect example of increased entropy). Pollinators need plants which bloom at many different times, grow at various heights, and have a multitude of flower shapes, colors, and

structures. For greater abundance and diversity of wild flowering plants, all we need to do is chill out, which is my favorite activity. In this situation, we must stop mowing everything. We can mow some places once a year in late fall, and mow others every second or third year. We can stop spraying human nerve toxins, a.k.a. grub control products, as well as other pesticides.

Before we know it, elderberry and raspberry will spring up. Woody plants like dogwoods and viburnums will appear. Coltsfoot and dandelions, essential early-season flowers, will come back. Asters and goldenrod (which by the way do not cause allergies), highly important late-season sources of nectar and pollen, will likewise return. Milkweed will begin to flourish, attracting monarch butterflies.

Wild grape, virgin's bower, Virginia creeper and wild cucumber will ramble without any help whatsoever. However, you may choose to help this process by sowing perennial or self-seeding wildflowers like purple coneflower, foxglove, bee balm, mint, or lupine. Even dandelion is worth planting. You'll not only get more wild pollinators; you'll see more birds. Redstarts, tanagers, orioles, hummingbirds, waxwings and more will be attracted to such glorious neglect. No feeders required.

I advocate more chaos in the landscape, even if our neighbor disapproves. They'll come around.

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*Paul Hetzler is a former Cornell Cooperative Extension educator.*

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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 [partnersinforesstry@gmail.com](mailto:partnersinforesstry@gmail.com) or by mail:

Partners In Forestry  
6063 Baker Lake Rd  
Conover, WI 54519

**Wood working for conservation, in celebration of vital conservation programs  
& how an aging woodworker who can not sit still for long spends time.**



This small, whimsical appearing table, app. 45" square footprint including attached single offset benches, all made of local woods, celebrates the 200 acre Wildcat Falls Community Forest. Project photos are placed along with samples of stone, moss and bark and imbedded deeply under clear epoxy. To scale of 4.5"=.25 mile, the borders of the community forest are burned into the spruce top. Highlights are marked in reference to photo locations, and timber types, ground cover and water features are painted in. The frame begins with an inverted Y oak limb and has branch wood of cherry, maple and cedar, with feet of white birch. Seats are white pine. This little creation of wood will go in the Ottawa National Forest Visitors Center at Watersmeet. The USFS, when acknowledging acceptance of the gift offer, said for especially "young visitors to utilize and enjoy the creativity and craftsmanship". Our purpose was very simple: to serve as a reminder of our gratitude to the USFS Community Forest Program and all who helped make Wildcat Falls your community forest.



And this one is about 5' long by 22" wide, top of a 4" thick white pine plank, with cedar underneath, has loose benches with split cedar legs. The map, scale of 2.5" = .25 mile, on top showcases the Pilgrim River Watershed Project, celebrating a partnership PIF and NWA were proud to be part of. Under the epoxy clear coat, one will see the river, feeder brooks, topography, with samples of sandstone and float copper. Woods roads and trails are defined. The wood-burned project borders display accent color to differentiate the Community Forest Program 276 acres from the Forest Legacy Program 1130 acres and the additional KLT easement and Conservation District parcels. Other conservation programs providing great benefit to the project have been NRCS Conservation Stewardship and the GLRI of the USFS which enabled stream bank restoration and tree planting to mitigate the 2018 Father's Day flood damage. Most of the project lands are enrolled in the CFR program with MDNR.

This set should soon be utilized at the new Keweenaw Land Trust office in Hancock MI. and visitors can be reminded of the benefits of these vital conservation programs and the enduring partnership created.

Next for woodworking, we hope to encompass public assess projects in the Town of Land O Lakes - such as Headwaters Cedar Community Forest, Upper Wisconsin River Legacy Forest and with hopeful expectations of the Border Lakes Forest Legacy proposal.

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## Disturbing ECO-NEWS outside our area

### Texas, oil and groundwater pollution

There is increasing alarm about West Texas oil fields that continue to produce toxic water leaks. The latest event was detected in Crane County in early December, when brine water poured out of the earth and over ranchland, Marfa Public Radio reported. The well wasn't plugged until Jan. 29, and the remediation project cost \$2.5 million. The water contained 154,000 chloride parts per million and at times flowed at 330 barrels, or 13,860 gallons, per hour, "creating a marsh-like scene," Mitch Borden reported. It was not always clear where it was coming from.

It took nine days to identify two wells and multiple other sources of the water. The Railroad Commission of Texas, which regulates the oil and gas industry in the Lone Star State, dug and lined 20 containment pits and had vacuum trucks remove the water. "There was a big crack," said Sarah Stogner, an area attorney, rancher, and critic of the RRC. "You could hear the water flowing underneath your feet, and you could see bubbles. It was like being at the beach."

Why is this concerning? The problem — perhaps caused by the injection of oil and gas wastewater underground and resulting increases in subsurface pressure — is so prevalent and productive that one leak has spawned a 60-acre body of water, Lake Boehmer. In addition to water, that abandoned wildcat well emits deadly hydrogen sulfide gas. These "zombie wells" are causing other issues too, including sinkholes. "The worst thing about this one is that it's toxic [and] radioactive produced water that is going into the groundwater," said Bill Burch, who has a seat on the RRC. "That is a horrendous, worst-case scenario, catastrophic-level event to occur in oil and gas in West Texas. This is now definitive unquestionable proof that the future of usable groundwater in Texas is at risk due to the salt water disposal issue," he added.

The commission said it protected "any threat to freshwater" and that area water remained uncontaminated, noting the brine water stopped flowing Jan. 21 and that the well had been cased and cemented. "Although there is no evidence to suggest that this is an orphan oil and gas well," the commission stated in a news release, "the RRC acted quickly to remediate the water flow in Crane County because the RRC will make every effort possible to protect freshwater in Texas. "

What can be done? In February, Colorado landowners sued an oil company for abandoning wells. In January, Texas received \$80 million in federal funding to plug orphan wells. "[TRC and Bureau of Economic Geology researchers] have what you call a war room to try to figure out what's going on in this area. It has unusual geology and unusual water flows," RRC deputy executive director Danny Sorrells said. "We want to get to the bottom of this and stop it."

Crane County is in the middle of the Permian Basin, which covers 75,000 square miles in Texas, New Mexico, and Mexico. The county is hundreds of miles from El Paso and San Antonio. Fourteen miles to the north in neighboring Ector County is Odessa, of "Friday Night Lights" fame. "If we don't stop this now, we are going to have complete and utter ecological devastation anywhere we've had historic oil and gas wells," Stogner said.

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## Wood to the rescue! Two stories

Here's a headline you never thought you'd read: **Japan is about to team up with the U.S. to launch a satellite made of wood.** Source The Guardian

No, it's not a wacky sci-fi plot or a publicity stunt. Wood might actually be the answer to a major problem with our current satellite designs. Takao Doi, a Japanese astronaut and aerospace engineer at Kyoto University, explained the issue to the BBC in 2020. "We are very concerned with the fact that all the satellites which re-enter the Earth's atmosphere burn and create tiny alumina particles which will float in the upper atmosphere for many years," he said. "Eventually it will affect the environment of the Earth." Aluminum damages the ozone layer.

The pollution might not be a major problem if we were talking about one or two satellites; but as more and more of our communication and technology has begun to rely on these devices, their numbers have ballooned. As of February 2024, Orbiting Now lists 9,413 manmade objects circling Earth, 13 of which are actively in the process of falling.

That's a lot of pollution, and researchers at Kyoto University hope they've found a way to avoid more, the Guardian reveals: with wooden satellites that burn up on re-entry. Working with logging company Sumitomo Forestry, they sent wood samples from several types of trees to the International Space Station. Lab tests on Earth and a year of testing in space showed that magnolia wood was the most resistant to splitting, so that's what they used to build the LignoSat probe — but all of the wood performed surprisingly well.

"Wood's ability to withstand these conditions astounded us," Koji Murata, head of the project, told the Guardian. He further explained that there are no living organisms in space to rot the wood, and the lack of oxygen means it can't burn.

The LignoSat probe is only about the size of a coffee cup, but if it performs well on its six-month mission starting this summer, more wood satellites could follow.

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## Ford might want to consider naming its next vehicle the Arbequina Cool-Down journal

The mouths of olive eaters are likely watering already, as that's the name of a "fruity, buttery, and nutty" olive sourced from Spain, according to none other than Martha Stewart. But the automaker isn't planning to stock vehicles with snacks. Rather, Ford has an interesting concept to build car parts from discarded olive tree wood waste.

It's part of an effort at Ford to use less plastic in car parts in a more circular production process. Planet overheating is already causing dry conditions in Spain and elsewhere, which impacts olive crops. Better utilizing more of the trees during harvest by making a planet-friendly plastic alternative can help reduce some of the environmental impacts hurting the trees in the first place, including drought, as the process doesn't need more water.

"We don't have any additional land usage or water consumption," project lead Inga Wehmeyer said in a video clip shared by Ford.

Company officials, working from their European headquarters in Germany, claim in the clip that they can turn branches, twigs, and leaves already grown by the olive trees into footrests and other parts. Testing has proved that the olive-based car parts are durable. Ford is continuing to study the material, with plans to use the unique product in the next generation of electric vehicles.

The invention isn't entirely plastic-free. Ford reports that 40% is olive fiber. The other 60% is recycled polypropylene plastic. Experts consider this to be "one of the safer plastics," according to Health Journal. "In order to get the mix just right, we had to experiment with different ratios of waste material and polypropylene," injection mold expert Thomas Baranowski said in a Ford press release. This mixture can be heated and molded to the shape of the needed part. In the clip, Wehmeyer holds a footrest that "worked very well," she said.

This effort from Ford is part of unique and unlikely innovations being developed in multiple industries to make everyday products from more sustainable sources.

At Ford, three years of olive research have garnered promising results, helping the company to become more sustainable. "It was hard work, but it ultimately enabled us to produce a material that shows no compromise in strength, durability, or flexibility," Baranowski said in the press release.

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### **POORLY THOUGHT-OUT WI LEGISLATION AVERTED**

The Wisconsin legislature spent a bit of time this past session scouring sustainable forestry.

One bill labeled SB965 and AB1030 was to ban all antlerless deer hunting in northern Wisconsin for four years. We were happy to oppose this proposal along with other forest and conservation groups. The bill passed both chambers but was averted by a governor veto on March 29.

SB 999 did not advance this session and we hope it is not brought up in future sessions! This bill would have opened roads on all MFL-Open lands to off road vehicles. We submitted detailed comments and asked pointed questions, to which we only received a boiler plate response which answered none of our questions! We must remain vigilant going forward.

PIF comments on these two bills are available on request.

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## By Sheri McWhirter | Michigan Live

L'ANSE, MI – The Nature Conservancy this week issued the first 211,000 carbon credits from its Michigamme Highlands project.

Scientists with the nonprofit say they take extra measures to ensure the amount of carbon sequestered in the forest matches the credits expected to be sold to companies that wish to reduce their climate impacts. The overall goal is to grow timber-producing forests in sustainable ways that foster biodiversity rather than convert ecologically rich areas into tree plantations.

“We shouldn’t just be farming carbon. We shouldn’t just be trying to sequester the maximum products if it is at the detriment of our native forest ecosystems, and that’s something that The Nature Conservancy does very differently,” said John Den Uyl, forest and climate conservation project manager for the organization.

The Michigamme Highlands carbon project covers 13,655 acres at the conservancy’s Wilderness Lakes and Slate River Forest reserves. The nonprofit bought the area in the western U.P. near L’Anse to ensure better forestry practices will be done at what is considered among the most climate resilient landscapes in Michigan.

Den Uyl works in the Upper Peninsula for the international conservation organization. He explained how the group designs its carbon projects to keep forests from being overharvested for timber interests, but also protected from carbon sequestration strategies that aren’t ecologically sound.

A prime example is red pine projects, which can be financially beneficial for either lumber or carbon markets but aren’t good for the environment.

“They are great at growing really fast, especially when you convert what was once northern hardwood forest into a red pine plantation. They get on those northern hardwood soils, and they grow very fast, and they sequester a lot of carbon. That is great for sequestering carbon, but terrible for everything else,” Den Uyl said.

To create a red pine plantation, loggers will clear cut what are often native forests, spray the ground with herbicide, cut trenches across the land, and then plant the more economically profitable tree species. That practice harms the soil, negatively affects wildlife, and interrupts the food web.

“We’re not using methods that are detrimental to the forest to maximize our carbon outputs,” Den Uyl said.

“Not only do we want to make sure that we’re storing and sequestering carbon out of the atmosphere onto our forest properties, but we want to make sure that we’re doing it in tandem with trying to promote biodiversity, using harvesting techniques and even fire.”

This week’s issuance of verified carbon credits was the first of what is expected to eventually total 860,000 credits over the project’s 20-year crediting period.

Conservancy officials said the credits are intended for companies in industries that are difficult to decarbonize to buy and offset their emissions, while concurrently working to eliminate as many emissions as possible from their business practices.

A carbon credit represents one ton of greenhouse gases being removed from the atmosphere and sequestered in plants through the natural photosynthesis of trees and other plants. The credits work as a type of atmospheric balance sheet for companies that will always have some carbon emissions, such as airlines or heavy industry.



“With the looming threats of rapid climate change and biodiversity loss, there is only so much time to address these existential threats to our way of life. It’s critical to use every tool at our disposal to create a world where people and nature can thrive,” said Helen Taylor, state director of the conservancy in Michigan.

“Offsetting emissions using high quality, verified carbon offset credits through voluntary carbon markets, like the Michigamme Highlands carbon project, present a great opportunity for businesses looking to do their part, offset their greenhouse gas emissions and provide valuable conservation benefits,” Taylor said in a statement.

Den Uyl said the conservancy strives to ensure the carbon credits issued won’t suffer reversals later by overestimating up front how much carbon will be pulled into the forest over time through natural photosynthesis.

Scientists measure the carbon in representative forest plots using allometric equations after hiking into the woods and physically measuring a certain number of trees. Then they come back and do it again in five years to monitor growth and double-check their math.

Officials said a portion of the money raised from selling the carbon credits will be directed toward climate resiliency efforts and adaptation of underserved communities in southeast Michigan – home repairs and energy efficiency upgrades.

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## **Moving trees north to save the forests- Knowable Magazine- Long and detailed story is based in neighboring Minnesota**

As the world warms, trees in forests such as those in Minnesota will no longer be adapted to their local climates. That’s where assisted migration comes in. By John H. Tibbetts March 2024.

On a brisk September morning, Brian Palik’s footfalls land quietly on a path in flickering light, beneath a native red pine canopy in Minnesota’s iconic Northwoods. A mature red pine, also called Norway pine, is a tall, straight overstory tree that thrives in cold winters and cool summers. It’s the official Minnesota state tree and a valued target of its timber industry. But red pine’s days of dominance here could fade. In coming decades, climate change will make red pine and other Northwoods trees increasingly vulnerable to destructive combinations of longer, warmer summers and less extremely cold winters, as well as droughts, windstorms, wildfires and insect infestations. Climate change is altering ecological conditions in cold regions faster than trees can adapt or migrate. Palik, a forest ecologist with the US Department of Agriculture’s Forest Service Northern Research Station, stops and points to a newcomer under the red-pine canopy: a broadleaf deciduous tree, bitternut hickory, as high as an elephant’s eye at about 10 feet tall and eight years old. “It’s doing really well,” he says. This bitternut hickory probably shouldn’t be thriving in the Cutfoot Experimental Forest in north-central Minnesota, near Grand Rapids. It likely began as a seedling in a nursery in Illinois, to the south, where deep freezes are less extreme. Normally, if a southern-adapted seedling is planted in an unsuitably cold climate like this one, it can risk frost damage and its survival is threatened. But the newcomer’s lush, green foliage exudes good health. It is a promising sign in a project that aims to keep forests growing in a warming world. In the Cutfoot Experimental Forest in 2016, the Forest Service planted seedlings of eight tree species from seeds, collected from woods up to several hundred miles farther south, as part of an experiment that Palik manages. Four species are native to this northern region: eastern white pine, northern red oak, bur oak and red maple. Four species are uncommon or nonnative: white oak, bitternut hickory, black cherry and ponderosa pine.

Two decades back, these southern seedlings likely would have struggled to flourish here. Today, Palik and his team can see the success of almost all the southern trees they planted. “They are going like gangbusters,” he says, “which is indicative that the climate is right for them,” although the researchers don’t know about the seedlings’ long-term health yet.

“The climate typical of southern Minnesota from 20 years ago is now in northern Minnesota,” Palik says. Climatic conditions have moved about 200 miles north in just two decades. Palik’s project is an experiment in forest assisted migration, the relocation of trees to help woodlands adapt and flourish despite the heating of their habitats from climate change. Foresters advocating assisted migration are typically not aiming to save specific species — instead, by moving trees, they want to help sustain productive forests for multiple benefits such as carbon storage, water filtration, wildlife habitat, recreational beauty and timber.

Experimenting with assisted migration calls for a different way of thinking about nature. Whereas ecological restoration typically looks to the past for cues on repairing degraded places, foresters exploring assisted migration are planting warmer-climate trees that could have a better chance of thriving under warmer future conditions. Forestry companies have long moved trees around to improve timber production on privately held land. But forest managers have so far been cautious about assisted migration projects for conservation aims on public land. Most of their projects have been experimental and small in scale, typically moving tree populations relatively short distances to the northern parts of their native ranges.

Now, though, assisted migration research for conservation is getting bolder with growing concerns about future forest disruption from climate change. And the movement is growing internationally, with research happening in Spain, Canada and Mexico. Today, Palik’s study is one of 14 research projects in a network. Most foresters who are experimenting with assisted migration are planting trees farther north or planting trees from lower elevations at higher elevations.

Sites across North America include western larch-mixed-conifer forests in the Flathead National Forest in Montana; diverse pine-hardwood woodlands at the Jones Center at Ichauway in Georgia; spruce-fir forests of the Colorado State Forest; and mixed-pine-hardwood forests of the Petawawa Research Forest in Ontario, Canada. Some Forest Service scientists, including Palik, expect that assisted migration will transition from a subject of research to a standard management strategy.

In line with the trend, the Forest Service and many other federal and state agencies are looking at revising their policies to accommodate this strategy. The US Fish and Wildlife Service, for instance, is considering allowing further revisions. Artificially moving a forest, some biologists say, has risks. Relocated species might become invasive or disrupt the ecological balance of the forest. But, says Palik, “the risk of not trying to move species for climate change is larger.”

Assisted migration was first proposed in the 1980s when some biologists anticipated that habitat conditions could change too fast for species to keep pace. Recent proposals have called for relocating endangered species to new habitats where they would have a better chance of thriving: Mexican gray wolves to northern parts of Arizona, New Mexico or Texas, for example, or Karner blue butterflies farther north from southern Michigan.

Palik and other forest scientists, though, are working on a different conservation solution. They want to save stressed forests from further decline or even disappearance by planting large numbers of more southern-climate-adapted trees, thereby diversifying woodlands so their canopies can survive.

“Forests die fast and grow slowly,” says Lee E. Frelich, a forest ecologist with the University of Minnesota Center for Forest Ecology. As climate change continues, he says, some forests could vanish, replaced by encroaching grasslands that do not provide the types of wildlife habitat and other benefits that healthy forests do. “Your only option in that case,” he says, “is to bring in new species or live with whatever nature does,” which — in cases of extreme climate change — “is likely to be brushy vegetation and not be a forest for quite some time.”

Climate change has already contributed to rapid forest losses. In recent decades, forests on every forested continent have suffered intense heat waves and drought exacerbated by climate change, says Henrik Hartmann, an ecophysiologicalist at the Julius Kühn-Institute for Forest Protection in Germany and lead author of an overview of forest die-offs in the 2022 *Annual Review of Plant Biology*. Extremes are a natural part of a forest's life history, and trees typically adapt to them — but this time is different. “These extremes were enough to bring trees to the edge or beyond the edge of functioning,” Hartmann says.

Cold-winter lands like the Minnesota Northwoods are disproportionately affected by climate change, which is causing shorter winters, drier summers and longer fire seasons. Minnesota has one of the coldest climates in the Lower 48 United States because it is strongly influenced by the Arctic. But the Arctic has warmed four times faster than the rest of the Earth since 1979, and the state now has the Lower 48's fastest-warming winters. Since 1970, average winter temperatures in Minnesota have increased by nearly 5 degrees Fahrenheit.

Minnesota is also unusual for having four major plant boundaries within its borders: mostly cold-climate conifers in the Northwoods; temperate deciduous trees such as oaks and maples in the state's middle and southeast; and former prairie grasslands and aspen parklands, these days predominantly farmland, to the west and southwest. Now these boundaries are blurring. Temperate deciduous trees have begun invading the understory of conifers in the Northwoods because the warming climate has begun favoring them. Many Northwoods tree species, including red pine, are likely to lose more and more of their livable southern range as warming continues. When Northwoods trees fade from the scene in the southern range, researchers worry that the migration of deciduous trees to replace them will happen far too slowly for healthy, continuous forest canopies to survive.

At the same time, the ecology of the Northwoods is becoming more tenuous. As climate change continues, giant swaths of northern conifers are increasingly likely to collapse suddenly — over just a few years — from combinations of climate-driven drought, insect infestations and other stresses. Many northern native tree species might not grow back there because they would no longer be suited to the region's changed climate.

Recently, Frelich and his colleagues studied a range of possible impacts from rising temperatures — largely dependent on carbon dioxide emission scenarios — on Minnesota forests by 2070. A rise of 1-degree Celsius above 1979-to-2013 average temperatures would allow broadleaf forests to further invade the Northwoods. With a 6 degree C rise, prairie would cover most of Minnesota, with only broadleaf forests surviving in the northeast corner. Worldwide, trees move north and south and up and down mountains in long-term response to changing climate, their seeds dispersed by winds and carried by animals.

It can take a millennium for many forests to reach equilibrium in a new location, according to Hartmann. That's not really a problem for the forests, which eventually migrate; instead, it's a problem for people. On weekends in Germany, people walk in the hills and mountains and through the forests, which is very popular as recreation, says Hartmann. But now, “They're all shocked — it looks like the moon, and the forest is dead.”

Waiting for new trees could take a while: Some tree species reach an age of 25 years before making their first seeds. “If we want all of the services [of forests], similar to what we had only a decade ago, then we may want to think about getting a few more options,” Hartmann says. “We should think about conserving a forest and not the forest that we know.”

That's what Julie Etterson, an evolutionary geneticist at the University of Minnesota Duluth, had in mind when she cofounded the Forest Assisted Migration Project with Meredith Cornett, then of the Nature Conservancy, and David Abazs of the University of Minnesota Extension. Etterson was worried that native tree decline would create openings for invasive plant species and sought a way to preserve forests by gradually moving in southern trees. The Forest Assisted Migration Project aims to build a regional market for

climate-adapted tree seedlings grown by local farms and nurseries based on principles of Etterson's and Cornett's research.

For one study, Etterson and colleagues acquired seedlings of red oak and bur oak grown from seeds collected in two climatic zones: one in northern Minnesota and one nearer the center of the state. Workers planted the seedlings on 16 sites in two northern seed zones as part of a Nature Conservancy reforestation project, and the trees were measured for three years. Red oak sourced from southern seeds — adapted to a slightly warmer climate — had higher survival, faster growth and other advantages compared with the northern type. Results for the southern bur oak, while more mixed, were also generally better than the northern bur oak.

Etterson's experiments in assisted migration, done in collaboration with the Nature Conservancy and public and tribal agencies, provide a scientific foundation for including climate-adapted trees in reforestation efforts underway in the state: In 2023, for example, the Nature Conservancy planted 1.4 million seedlings across northern Minnesota as part of a multi-partner goal to have 10 million seedlings planted on public lands by the end of 2024. As they plant, workers select about three-quarters of seedlings in the traditional way — seeds are collected from a climate zone, grown to seedlings in that zone, and planted in that zone, too. The rest of the seedlings come from parent seeds collected in forests farther south.

"We are using the ones that science tells us are in the best position to be climate adaptation winners," says Chris Dunham, associate director of forest resilience with the Nature Conservancy in Duluth. But they are turning the dial slowly, he says, "because there's also plenty of unknowns dealing with natural systems."

The dial is turning slowly for another reason: Nurseries in the state can't provide enough local seedlings to meet growing demand for "climate-smart" trees. And so Abazs started organizing a broader supply chain of seed collectors, seedling growers and buyers, and set a five-year goal of expanding the Farm & Forest Growers Cooperative to a network of 100 farmers and nurseries to each grow 10,000 southern-adapted, locally grown tree seedlings per year. The program would then expand the number of purchase agreements with restoration agencies such as county forestry departments.

Through all of this, the Forest Assisted Migration Project would recommend which young trees to plant where, designating them as green, yellow or red. The designations are based on Etterson's research findings, input from experts and different kinds of assisted migration.

Ecologists are experimenting with three types of forest assisted migration for climate adaptation. Scientists are testing **assisted population migration** (left) by moving native trees to slightly cooler climates within their current range. In experiments of **assisted range migration** (center), researchers are relocating trees just beyond their current historical range where natural dispersal is still possible. **Assisted species migration** (right) means moving species to different climates beyond where they could disperse seeds.

Seedlings designated as green are considered safe to plant in northern Minnesota because they already thrive there. Southern seedlings of native species would be planted farther north but within their historical range. This is called assisted population migration.

Trees designated as yellow require more caution. This is assisted range migration — moving species beyond their current historical range to keep up with climate change. This process also mimics what natural seed dispersal might do. "These are species that may be just creeping in our area or have very small populations in our area," says Abazs, such as Eastern hemlock and American beech.

These southern seedlings are more likely to become resilient trees. Among other things, the climate-adapted trees may bloom earlier in the year and end growth later in the fall, capturing longer periods of photosynthesis.

Finally, trees designated as red by the Forest Assisted Migration Project would be ones that could not naturally disperse seeds to northern Minnesota because the distance is too great. Relocating that category of tree would be considered assisted species migration. Seedlings from southernmost Minnesota or northern

Iowa, for example, would be designated as red. “Those are ones that we are not entertaining at this point,” says Abazs.

One of Palik’s relocated species over at the Cutfoot Experimental Forest would have gotten a red rating by those guidelines. But Palik is placing bets on the tree as a future invaluable conifer for northern Minnesota. Palik took ponderosa pine seedlings from seeds collected in northwest Nebraska, hundreds of miles to the south and west, and planted them in experimental plots for research purposes. Though only a fifth of them lived, the ones that survived have flourished. His experiment suggests that ponderosa pine — a tall, long-needled tree used for timber but adapted to warmer, dryer summers and more moderate winters — could someday thrive in northern Minnesota if red pine falls away. Temperate broadleaf trees will continue to edge into the Northwoods, but they can’t replace the characteristic pinelands that define how many Minnesotans experience the region, Palik says.

Many forest managers could eventually face a choice: Consider moving southern trees into northern areas, or eventually wind up with fewer productive woodlands for timber and other uses. It’s imperative, Palik says, that we work to maintain useful woodlands. “The forests at the end of the century are not going to be your grandfather’s forests,” he says. “But they’re going to be the forest your grandchildren inherit.”

*Joe’s note: In reading this, I wonder if our native red pine, much still displaying historic fire scare from a century ago, should simply be retained as reserve trees, such as we treat hemlock and yellow birch in hardwood stands?*

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Photo Boundary Road trails

A hiker’s companion oversees the popular Pilgrim River on March 29, following a spring snow. The Pilgrim River Watershed project protected ~1600 acres of forest and miles of riparian corridor near Houghton MI. Conservation programs which sealed this effort include USFS Forest Legacy program through MDNR and USFS Community Forest & Open Space Conservation Program. Dozens of individuals and foundations provided the matching funds. Programs benefitting project management include Great Lakes Restoration Initiative, NRCS Conservation Stewardship and MDNR Commercial Forest.

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**Have you checked out PIF’s website?**

[www.partnersinforesry.com](http://www.partnersinforesry.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.