

Visitors enjoying the Habitat for All Garden, Photos by Brewster Burns



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Rain? What Rain?

The 2023 Monarch Festival Was A Great Success!

Sometimes, solutions to large-scale prickly problems are as close as home. That was the message delivered by Doug Tallamy to the 100+ people attending his webinar Networks For Life, Homegrown National Park (HNP) at the Gem Theater on Saturday evening. Rather than focusing on large-scale efforts, Tallamy insists our backyards can be key players in addressing the significant decline in songbird numbers. The keys to success include reducing the size of your lawn and replacing it with plants (primarily trees and shrubs) that support the most caterpillars. Why caterpillars? Caterpillars convert inedible leaves into tasty protein, a critical nutrient for baby birds. More plants means more caterpillars means more birds; it is as simple as that.

Richard Blanco was a special guest at the Annual Meeting. His place-based poems were a perfect match



to our mission and set a beautiful tone for the day. Despite off-and-on rain, the Monarch Festival was a success. Over 500 attendees enjoyed touring the garden, attending workshops, seeing and learning about some of the odder insects that can be found in Maine, and buying tickets for the raffle. New this year, a hands-on indigo dyeing workshop was extremely popular.

We are already planning for the 2024 festival. More information will be coming soon.

Working with our
neighboring land trusts

Eating the elephant:

A regional approach to conservation-based solutions

Erika Rowland, Executive Director 2019-2023, Greater Lovell Land Trust

Nowadays when it rains in our part of western Maine, it pours; and that's not a figure of speech. Last fall and into early winter we had a series of heavy rains. GLLT trails that climb to summit vistas, like Sabattus Mountain, became raging waterways that needed repair and culverts in our towns were overwhelmed, leaving gaping holes along many rural roads. Our rapidly warming spring and fall seasons mean that ticks are active through much of the year, giving us no break in the need for tick-check diligence. And then there's winter.

Recent winters have been hit or miss for serious snow cover before mid-January, much to the dismay of skiers and snowmobilers. The lakes are freezing later—ice-in on Kezar came in mid-January in the deep bays this year—and the Maine Warden Service had ice safety warnings for fishing on many Maine lakes through January. And spring? Late snow saved some of the ski season, but who isn't dreading a repeat of April and May heatwaves in the 80s, early hatches of biting insects, and then the weeks-long stretches of summer highs in the 90s that have become the norm in recent years?

Goal: Community Resilience

There is no doubt that climate is affecting our local weather and putting challenges on the human and natural communities. But there is plenty of work being done to protect our future, including new resources to help individuals and communities to take action. Lovell, Bridgton, Fryeburg, and Norway are a few area towns taking part in the Maine Community Resilience Partnership planning and applying for grant support as part of the state's "Maine Won't Wait" Climate Action Plan. In our area, our land trusts are also working to shape their work into a direct response to challenges triggered by climate change.

GLLT and its western Maine neighbors, Loon Echo Land Trust, Mahoosuc Land Trust, Western Foothills Land Trust, and Upper Saco Valley Land Trust, are taking a collaborative approach to climate change. By planning

and working together on coordinated action across the million-acres that we collectively serve, we are focused on regional resilience for the future. We are also working individually on the particular needs for each organization.

In our greater Lovell service area in 2021 and again in 2022, GLLT-led projects have received funding from the "Land and Climate" grant program of the Open Space Institute and Land Trust Alliance. The funding allows us to take a regional look at critical conservation lands and land management strategies that are key to supporting our natural and human communities as we prepare for the future. We are creating a response plan to address impacts and looking for opportunities to build resilience and sustainability.

Facing Climate Change: Mitigation and Adaptation

Climate change action comes in two flavors. There is mitigation — reducing the amount of carbon and other greenhouse gasses that are warming the planet's atmosphere and waters. And there is adaptation — changing and adjusting what we do and how we think to better align with the new conditions and impacts. Warming and related changes are already happening all around us and new threats seem to arrive daily. The changes that are affecting our lives are also impacting the plants and animals that are acclimated to climate conditions that have been relatively constant for the last 500 years or more. The collaborative land trust efforts are making headway on both fronts.

Conserving undeveloped lands is a key strategy. The leaves of all plants take carbon out of the atmosphere to create the sugars they use as energy and forests store carbon in tree trunks, branches, and root systems, as well as in downed wood and other debris on the forest floor that mixes deep into the soils. Tree canopy and forest vegetation also slow the surface flow of heavy rains, reducing the erosion and damage caused by flooding. Western Maine land trusts are engaging beyond our historic nature-based activities, putting even greater focus on actionable climate solutions.

Working Together: Where do we Start?

In 2021, the five neighboring land trusts collaborated to build a mapping tool using data from The Nature Conservancy (TNC) analysis of Resilient and Connected Landscapes in our combined service areas. The study area stretches from Sebago Lake into the Mahoosuc Range and other parts of the White Mountains. The TNC analysis highlights largely undeveloped and connected areas of land that have hills and mountain slopes (diverse topography), water bodies, and ecologically-important plant or animal communities. Wildlife has the best chance to adjust in-place or by traveling through these resilient and connected areas that allow for comfortable ranges of temperature, rainfall tempered by forest lands, food resources, and other needs as the habitat changes. Together, the land trusts have identified such a corridor along the boundaries of our collective service areas that links undeveloped areas with existing and potential conservation lands as a regional priority for future conservation.

On the Ground: Will Durkin, Field Naturalist

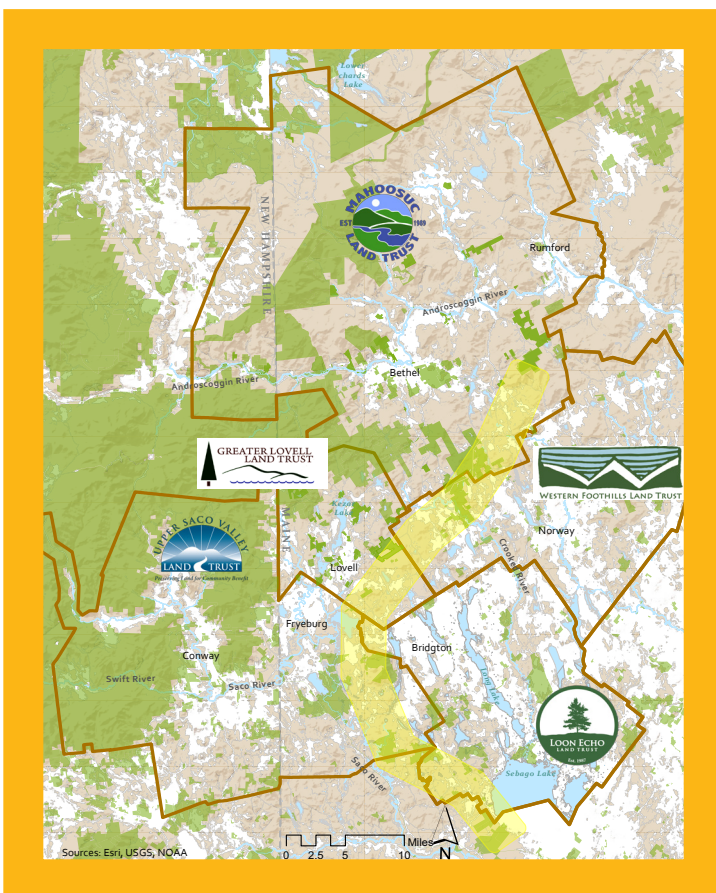
More recently, the land trust collective received grant funds to hire a researcher — Will Durkin, Master's degree candidate from the University of Vermont's Field Naturalist Program — who will spend the summer on work to integrate the known and anticipated effects of changing climate conditions into the management of the thousands of forestland acres we collectively conserve. Starting with a few selected land trust holdings that represent a range of forest types, and using a framework developed by the

USFS Northern Institute of Applied Climate Science (www.niacs.org), Will plans to compile existing information and conduct his own field work to identify tree species and tree stand structures that may be best suited to withstand drought, warming winters, insect pests, disease, and other changing climate conditions. He will be advised by forest climate adaptation specialists from UVM's Silviculture and Applied Forest Ecology Lab, as well as professional staff from the five land trusts. With additional support from a community conservation consultant, the land trusts will also publish website content about the nature-based solutions of our land trusts and other organizations.

Collaboration: The Best Way to Eat an Elephant

The issue of climate change reaches far beyond our region, and far-reaching action is needed to raise an effective response. Keeping lands open, connected, and forested will reduce storm impacts and flooding, allow the animals, plants, birds, and insects of the ecosystems to adjust to the changes, and foster the capture and storage of carbon. Resiliency and sustainability for the future is one of the most important, mission-aligned tasks that land trusts can tackle. Working collaboratively, we can take a more significant bite out of the climate change elephant.

This map shows the general service area boundaries of the GLLT and our neighboring land trusts. The yellow pathway indicates the general location of a climate resilient conservation corridor, a pathway that could provide largely uninterrupted and connected habitat for movement of animals, birds, insects, and plant life in response to changing conditions.



Editor's Note: During Erika Rowland's tenure as GLLT's Executive Director, she provided key leadership in collaborative climate change work for peer conservation organizations, including MLT. Erika now serves as Eastern Programs Development Director for Forest Stewards Guild.

August 2023 Update: Five Land Trusts Funded for Collaborative Climate Conservation Project

MLT and four partner land trusts have just received foundation funding to escalate the pace of climate-informed land protection projects in a 1.5 million-acre area stretching from Sebago Lake to the Mount Washington Valley. Building on earlier research the groups have done together, the project will hone in on a Climate Resilient Focus Area within their shared landscape. It will provide funding for the critical start-up costs to conserve those areas that will be the most critical for plant and animal habitat and humans in the face of climate change, including a "climate corridor" to provide habitat connectivity across the trusts' combined service areas. The partners are: Greater Lovell Land Trust, Loon Echo Land Trust, Mahoosuc Land Trust, Upper Saco Valley Land Trust, and Western Foothills Land Trust.

Big Tree, Small Trees: Forest Age and Carbon Sequestration

Spenser Williams, MLT Land Steward

Forests play an important role in absorbing carbon dioxide and fighting climate change. Indeed, an artificial technology that sequesters carbon on the scale of forest ecosystems does not exist. That said, in the last few years I have heard discussions and different opinions on what types of forests do it best: older forests or younger forests.

Often this age classification is used analogously to older forests on conserved lands versus younger managed commercial forests. And many times these arguments play out in support or not of commercial logging or forest management as tools to fight climate change. There are well established carbon monitoring plots on forests of both types on federal or state or local lands. Simple measurement and acquiring data is not a problem in addressing this question. Rather, digesting the volume of data and identifying solutions specific to a geographic area can be daunting tasks.

I set out to dig into this research and emerge with a whole picture and clear victor of the superior forest for sequestering carbon and fighting climate change at scale. That did not happen. However, I can report on the general trends that emerged in this research and some key takeaways for supporters of conservation.

Younger Forests Sequester Carbon Faster

More than once during my reading this was the headline or cutting edge of an argument wholly in support of commercial or managed forests as the superior carbon sequestration tool. When assessed tree for tree, an older tree of the same species will absorb more carbon dioxide in a year than a younger tree. This comes down to simple math, that the rate of annual added individual tree mass increases as tree size increases. This mass, in turn, is representative of the carbon sequestered. Consider the diameter of the 100th growth ring against that of the 20th—in essence it is the snowball effect, or, for the financial minds: compounding interest.

And yes you're right, this contradicts the initial claim. But we do not consider (nor measure) forests as individual trees. Instead, forests are measured by area, the density of trees therein approximated, and the resulting carbon budgets extrapolated from there.

That density (trunks per acre) is not a fixed number. Generally speaking, it starts high and trends lower as a forest ages. And this is the rub: while older individual trees may absorb more carbon dioxide than younger individual trees, there are fewer trees in a given area of older forest versus a younger forest.

What is more, the majority of these older forests occur on conserved lands where natural processes are upheld and hands-on management minimized. As such, after the behemoth trees die, they are left to fall and rot in place, returning vital nutrients to the soil and emitting carbon dioxide in the process. Is harvesting the trees and keeping the carbon sequestered in wood products the solution?

Most “Commercialized Carbon” doesn’t stay Sequestered

Those in support of the climate benefits of commercial forestry have much to say about the ongoing carbon sequestration in wood products such as furniture, lumber, or other building materials. The unfortunate truth is that it is a long process from tree to desk, with many steps almost all of them resulting in a loss of the sequestered carbon back to the atmosphere. Tree harvesting often leaves the root mounds and tree tops in the forest to decompose releasing carbon dioxide. Additionally, many wood products are used in temporary applications and enter the waste stream emitting carbon dioxide during additional decomposition. The equipment necessary for tree harvesting also creates carbon dioxide emissions.

What About Carbon Out? NPP, GPP and the Complete Carbon Budget

During photosynthesis trees absorb carbon dioxide from the atmosphere, creating glucose molecules and releasing oxygen – this is Gross Primary Productivity (GPP). These same trees are also releasing carbon dioxide at the same time, through a process called respiration, as energy is consumed to replicate cells to grow and maintain the organism. This difference accounts for Net Primary Productivity (NPP). Trees are not exempt from the cost of doing business.

Obviously, the tree needs to absorb more carbon dioxide than it releases to stay alive, and it therefore has a positive NPP. What may seem a trivial detail becomes a major accounting item when extrapolated across an entire forest. These two items become the basis for a more complex terrestrial carbon budget (exempting ocean photosynthesis from algae and carbon sequestration there). This carbon budget likewise can take separate paths in older and younger forests.

A Deeper Look

Soils store more carbon dioxide than all terrestrial plants and earth's atmosphere combined. Carbon is sequestered into soils by plant growth and decomposition, in part, by a process called fine root turnover. Fine roots are the smallest of the plant, where the actual water and nutrient absorption takes place on a molecular level. These fine roots because of their small size are susceptible to decay and predation. Indeed, it is replacing these fine roots that accounts for much of a tree's maintenance and energy consumption via respiration. It is the decay or turnover of these fine roots that can move carbon from above ground to below ground.

I found one study stating that the process of carbon sequestration to soils is found to accelerate in trees older than 100 years. What we do know is that the carbon storage pool in soils is massive. And while carbon accumulates in soils slowly, soils can release huge amounts of carbon very quickly during intense or widespread disturbances such as wildfire or land use change (eg: clearing forested land for agriculture).

Comparing Apples to Oranges

After setting out to find a victor of older forests or younger forests as better for carbon sequestration and fighting climate change, I realized this is too complex an equation to arrive at a finite answer, and the answer lies in the realm of "it depends" and "if you only consider." In some ways this question cannot be answered because we are comparing apples to oranges. There is so much of the forest ecosystem that changes in a managed or commercial forest that trying to assess carbon sequestration based on the trees alone misses the mark.

Young forests, and many of those studied to support this research, tend to occur in areas that have been commercial forests for decades. Whereas, older forests tend to occur on conserved lands with a history of conservation that preserves natural processes. The variation on the soil microbiome, forest heterogeneity, history of natural disturbance or not, and latitude

all play a role in shaping how and for how long a forest will sequester carbon. From the lens of conservation, older forests play an important role in both sequestering carbon and conserving habitat. Commercial forests also sequester carbon, perhaps at a faster rate but over a shorter period than conserved forests. Which is better? Well...

Mahoosuc Land Trust Plays Lead Role in Nationally Recognized Carbon Project

MLT and Loon Echo Land Trust (LELT) teamed up recently to be the first in a national program designed to demonstrate how a land trust can aggregate its holdings with those of other land trusts to access voluntary carbon offset markets. Through a program developed by the Land Trust Alliance and Finite Carbon, MLT and LELT are now able to receive compensation for increasing or maintaining carbon stocks on their forested lands relative to baseline levels.

As more fully described in the cover story of the national publication below, MLT will be storing more carbon on its lands and at the same time gaining access to revenues that will enable further conservation of important forest land and habitat. The full article can be read by following the QR code below or by visiting

www.landtrustalliance.org/resources/learn/explore/



Photo Credit: Jerry Monkman/Ecophotography

New MLT Board Members Bring Organizational Leadership Experience

Following U.S. presidential inaugural poet Richard Blanco's reading at the 2023 Annual Meeting, MLT formally recognized six departing board members before the membership voted in the new board. Departing president Laurie Winsor thanked Steve Smith, Sara Shifrin, Bob Iles, Cassie Mason, and Glenn Saller for their enormous collective impact on MLT and the region. Board member Bonnie Pooley presented the Bruce and Becky Bailey Award to Laurie, in recognition of the leadership that she has provided to MLT over these years of transition and growth.

MLT's two new board members, Helen Durkin and Karen Burns, bring exceptional organizational experience and leadership. Helen is an attorney and was a nonprofit executive with over 30 years of experience developing and achieving organizational strategic goals, establishing high-performing teams, and building internal and external coalitions. She led global policy and communications campaigns to get people more active and developed grant and major-donor campaigns to fund those efforts. Helen has been consulting with MLT as a volunteer on developing the Habitat for All initiative, serving on the

Valentine Farm Committee on other special projects, and working in the Habitat Garden. Helen and her husband Mark split their time between Medway, MA, and Bethel. She has two daughters and a crazy springer spaniel. Helen is obsessed with gardening, supporting natural habitats, skiing, biking, and being active.

Karen Burns is currently the Assistant Head of School for Advancement for Gould Academy. She leads the efforts in fundraising, as well as alumni, community and family relations. She came to Gould after working for 9 years at the Island Institute, the nonprofit community development organization in Rockland, ME. As the Chief Leadership Officer, Karen worked with community leaders, designed and facilitated professional development, and managed a portfolio of major donors. Prior to working at the Island Institute, she was an English and Theater teacher for 10 years on Vinalhaven Island. Karen has an undergraduate degree in English and Psychology from Amherst College and a Masters degree in Teaching from the University of Maine. She lives in Bethel with her husband Bruce, son Brandon, daughter Natalie, and an active Shepherd mix named Ollie.

Richard Blanco read poems about connections to place, belonging, and community at the 2023 Annual Meeting



New board member Helen Durkin



New board member Karen Burns

Celebrate the Second Annual Buck's Ledge Community Forest Day on Saturday, October 14th!

The iconic granite face of Buck's Ledge, which rises from the eastern shore of North Pond in Woodstock, is a magnet for hikers, artists and photographers. The Buck's Ledge Community Forest, created in 2022 thanks to the generous support of many donors and funders, is now owned and managed by the Town of Woodstock. Mahoosuc Land Trust holds the conservation easement which ensures permanent protection of this community jewel.

Buck's Ledge Community Forest Day, organized by the Woodstock Conservation Commission and MLT, recognizes recent developments at Buck's. Many may already be familiar with its traditional recreational uses which now include trails connecting Lapham Ledge and the summit of Moody Mountain. Rare plants, old growth trees, six distinct bat species, and nesting peregrine falcons await the intrepid visitor.

This year we will celebrate the creation of the Summit For All scenic outlook, with remarks from special guest Enock Glidden, founder of Outside for All. Enock is an athlete with a serious disability (Spina Bifida), an adventurer with a spirit for life, an engaging motivational speaker and a dedicated advocate for others with disabilities. Enock inspires people of all abilities to try new things. His presence is only one aspect of the Access for All theme of this year's Forest Day. Another is the plan to create a nearly 1 mile long wheelchair-accessible Trail for All. It will lead in two directions from the accessible parking at the log

landing. One will lead to the Summit for All, the other will meander around and through a meadow into the forest before returning to the starting point. Come and learn how you can help us make this Trail for All a reality in 2024.

At the conclusion of the program we will celebrate with our tradition of floating giant bubbles from the Summit For All scenic outlook. Please come and experience the beauty of Buck's Ledge during peak fall foliage.

The event officially begins at 2 p.m. on Saturday, October 14th. Parking will be on a first come basis in the Buck's Ledge parking lot, and along Mills Road on the other side of Route 26. It is a half mile walk on the access road from the Buck's parking lot to the Summit For All scenic outlook. A bus will be available to shuttle those who need assistance or feel they would like a ride. Vehicles with disability plates or wheel chair lifts are permitted to use the access road. Please allow time to get to the Summit For All by 2 PM.

The Town of Woodstock's August 2022 acquisition of this property was a historic achievement for the community. Funds were raised in a remarkably short time—just over a year—thanks to a synergy of partnerships including Mahoosuc Land Trust, Northern Forest Center, and Forest Society of Maine, with the leadership of the Woodstock Conservation Commission (WCC). The project inspired wide-reaching support among our communities, exceeding the local fundraising goal of \$175,000, with more than 270 people contributing.

The Buck's Ledge acquisition project has also inspired art from young people. Students of Melissa Prescott's community art class designed and constructed four unique benches that have been placed along the trail network. In addition, Telstar Middle School art students conducted and recorded interviews with a diverse group of four individuals relating to Buck's Ledge. These records are archived at the Bethel Historical Society.



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