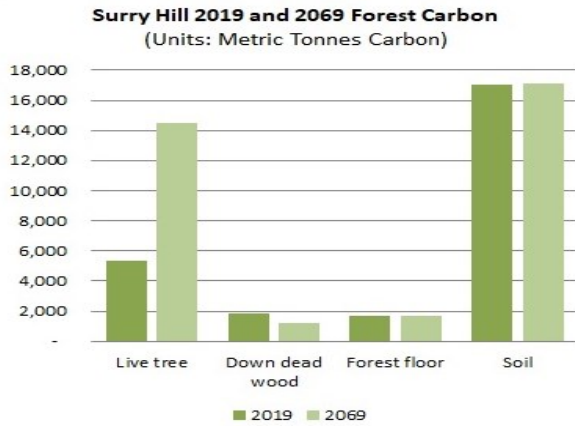


## How Much CO<sub>2</sub> Will the Surry Hill Community Forest Sequester in 50 Years?

Managing the Surry Hill property for older trees, protecting soil carbon, and controlling invasives will produce the following outcome:



*Conditions Under Natural Stand Development. Graph based on forest stand data by Jon Doty, with estimates from a forest carbon calculator developed by Mitch Lansky and Ken Laustsen.*

### Carbon Sequestration Over the Next 50 Years

- Soil carbon will remain relatively constant while live tree carbon will increase significantly.
- Total forest carbon will increase 33% or 8,760 metric tons (from 26,670 to 35,430 tons).
- Future carbon sequestration on the Surry Hill property will offset the CO<sub>2</sub> emissions from:
  - ⇒ 1 year of driving from 6980 average cars **Or**
  - ⇒ 50 years of electricity use from 112 average homes **Or**
  - ⇒ 11,400 tons of waste landfilled instead of recycled.<sup>2</sup>
- Today's 15-year-old hemlock and hardwood forest, which is currently the youngest and largest stand on Surry Hill, will sequester the most carbon over the next 50 years. Tree carbon sequestered in this stand will increase 419% (from 1,670 to 6,990 tons).

## What Is Local WoodWORKS?

Since 2013, Local Wood WORKS partners and supporters have been building on the influence of the “local wood” movement. We use the term “local” in a broad sense, meaning Maine and the surrounding Northeast region. Our partners and supporters are committed to sustainable forestry, strong and resilient local economies, conservation of both working woodlands and ecological reserves, and reduced energy consumption costs based on the use of local products.

Managing forest land for high-value timber can allow builders, homeowners, engineers, and architects to substitute wood for high-emission products, like concrete or steel. For example, manufacturing a floor beam from wood requires 90% less CO<sub>2</sub> emissions than the same beam made from steel.<sup>2</sup>



### Why Local Wood?

- It's *neighborly* – it supports a chain of local jobs, from logger to trucker to artisans and more.
- It's *green* – it's a renewable resource that stores carbon during its life.
- It's *practical* – it's affordable for many construction needs.
- It's *convenient* – it's available from a variety of mills and building supply stores.
- It's *Maine* – in its scent, its warmth, and its character.

## What Can I Do To Help Mitigate Climate Change?

### Get Involved With Local Wood WORKS

Buy local wood. If you're thinking about building a house, a shed, or even a mailbox, turn to local wood products to minimize your carbon footprint. Lumber used in building construction will sequester carbon for the lifespan of that building.

### Manage Invasive Species

Check every year to see if invasive plants are growing on your property. While low numbers of species like glossy buckthorn or Japanese knotweed may seem insignificant, seedlings can quickly take over the understory and crowd out native plants, impacting forest health and carbon sequestration.

### Keep Forests as Forests

The most important step you can take to help mitigate climate change (as a forest owner) is to keep your forest as a forest. According to the EPA, converting one acre of forest to development releases ~125 metric tons of CO<sub>2</sub>. In contrast, an acre of forest growing for one year captures about one metric ton of CO<sub>2</sub>.

### Talk to A Professional Forester

A professional forester can help you to develop a management plan that's best for you and your land, then can help implement and oversee



*Thanks to those who contributed expertise and time towards this brochure:*  
 Ken Laustsen, Maine Forest Service (MFS) Biometrician, Retired;  
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 Morton Moesswilde, MFS;  
 & Jane Matrisciano.  
**Text: Joe Hazelton, August 2019**



## Keeping Forests as Forests: A Natural Solution to Climate Change



*Photograph: Jane Davis*

## Managing the Surry Hill Community Forest for Carbon Sequestration

*Joe Hazelton*

*KLT Summer Intern 2019*

## KENNEBEC LAND TRUST

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Photograph: Jane Davis

**The Surry Hill Community Forest** is KLT's newest property. Its 331 acres include diverse stands of regenerating forest and a 600-foot hilltop, complete with fields that offer panoramic views of the surrounding lakes and Mt. Washington, 63 miles to the west. Permanently conserving this property will protect water quality and valuable wildlife habitat and provide recreational opportunities for all ages. One of KLT's primary management goals for the Surry Hill property is to help mitigate climate change.

**What Causes Climate Change & What Is Carbon Sequestration?**

Our use of fossil fuels generates greenhouse gases, primarily CO<sub>2</sub>. Greenhouse gases trap heat in the atmosphere, contributing to the earth's rising temperatures. Carbon sequestration is the process by which trees and other plants pull CO<sub>2</sub> out of the air through photosynthesis and store it as carbon.

**How Do Maine Forests Sequester Carbon?**

On a yearly basis, forests and harvested wood products in the United States currently offset about 15% of the CO<sub>2</sub> from domestic fossil fuel emissions.<sup>1</sup> Maine, as the most forested state in the nation, is making a significant contribution in the effort to mitigate global climate change.

Many large forest landowners in Maine manage their lands to maximize timber revenue. KLT is using Surry Hill as a model of what can happen if a forest is managed with climate change mitigation goals as the top priority.

**How Will KLT Maximize Carbon Sequestration at Surry Hill?**

**Protect Soil Carbon**

Since 50% of the carbon in Maine forests is stored in the soil, protecting soil resources is a key component of carbon sequestration. The best way to protect this carbon pool is to maintain canopy coverage, i.e. "Keeping forests as forests."

**Promote Native Species**

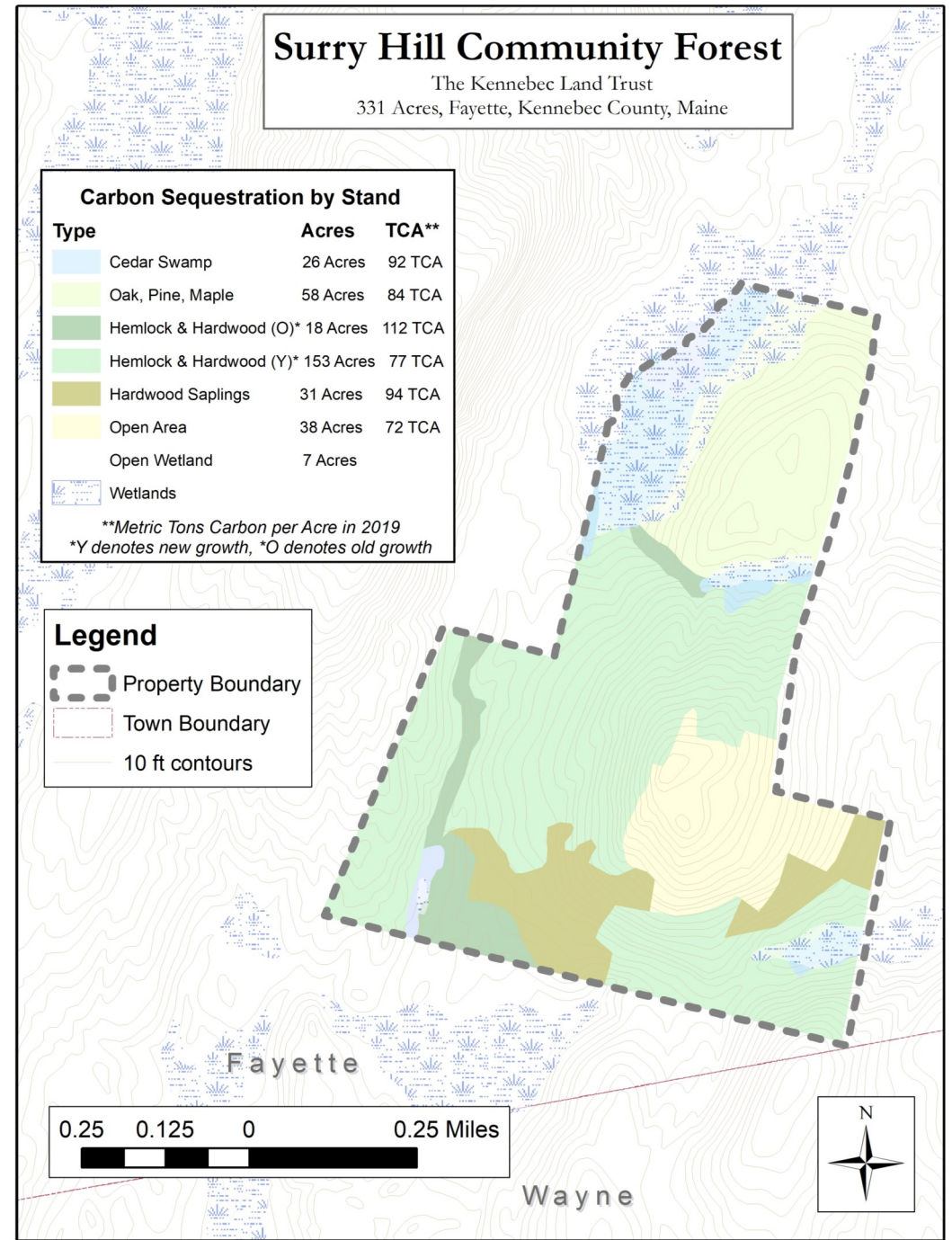
Forests that support a diversity of native plant species are healthier and sequester more carbon than those dominated by invasive species. Identifying and controlling invasive species (for example, honeysuckle, multiflora rose, and Japanese knotweed) is central to KLT's Surry Hill forest management plan.



Photograph: Lloyd Inland

**Grow Big Trees & Selectively Harvest**

A selective timber harvest can be designed to limit impacts to forest carbon stocks, while helping to stem *leakage*. When a forest is closed off from timber harvest, the need for timber products will remain the same. Consequently, demand will *leak* into other regions, driving builders to acquire timber from other areas in which timber harvest is less regulated. Harvesting timber in Maine allows foresters to supply local wood products with greater environmental regulation at a fraction of the total emissions cost.<sup>2</sup> Harvests that produce long-lived products, such as lumber (as opposed to paper or fuel), also maintain the carbon sequestered in the wood. An additional benefit from harvests of higher diameter timber is the opportunity to substitute wood for other high-emission products, like concrete or steel, in construction.



1. Ryan et al. (2010) "Synthesis of the Science on Forests and Carbon..." *Issues in Ecology*
2. Gunn & Buchholz (2019) "Forest Sector Greenhouse Gas..." *Forestry: An International Journal of Forest Research*
3. Oliver et al. (2014) "Carbon, Fossil Fuel, and Biodiversity..." *Journal of Sustainable Forestry*
4. Estimates from forest carbon calculator developed by Mitch Lansky (2019)
5. Equivalency data from EPA.gov (2019)