

Sustainable Forestry in New England: Forest Health and Low-Carbon Cities

Credits: 1.0 AIA/CES HSW LUs, 1.0 PHD credit, 0.10 ICC credit

MASS TIMBER+SM
OFFSITE CONSTRUCTION CONFERENCE

PRODUCED BY



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Sustainable Forestry in New England

Mass Timber+, Boston

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Course Description

This course explores how sustainable forest management practices in New England promote climate resilience, biodiversity, carbon storage, and long-term ecosystem health—essential elements for the built environment and public welfare. Participants will gain insight into the USDA's Advancing Markets for Producers (AMP) grant and its role in supporting both the supply and demand sides of the forestry economy.

Through a regional lens, the course highlights practical strategies architects can use to support responsible forestry through material choices, while addressing common misconceptions about forest management, including clear-cutting, slash management, and biodiversity protection. Attendees will leave with a clearer understanding of how sustainable forestry can directly influence carbon-conscious design and enhance environmental performance in projects.

Learning Objectives

1. Describe the relationship between sustainable forest management and the health, safety, and welfare of communities, particularly for forests and communities in New England.
2. Identify key challenges and opportunities in the forest products market and the availability and sustainability of wood-based materials used in architectural practice.
3. Differentiate between appropriate forest management practices across regions and ecosystems, including the rationale for different harvesting techniques, and assess their ecological and environmental implications.
4. Address common public and client misconceptions about forestry practices by referencing New England-specific best practices that prioritize ecological health, material sustainability, and landscape resilience.

History

New England Forestry Foundation was founded in 1944 as a charitable organization devoted to the practice, teaching and promotion of sustainable forest management.

Photo: Thacher Memorial Forest
Hancock, NH, May 1958
"Largest white pine on the forest"





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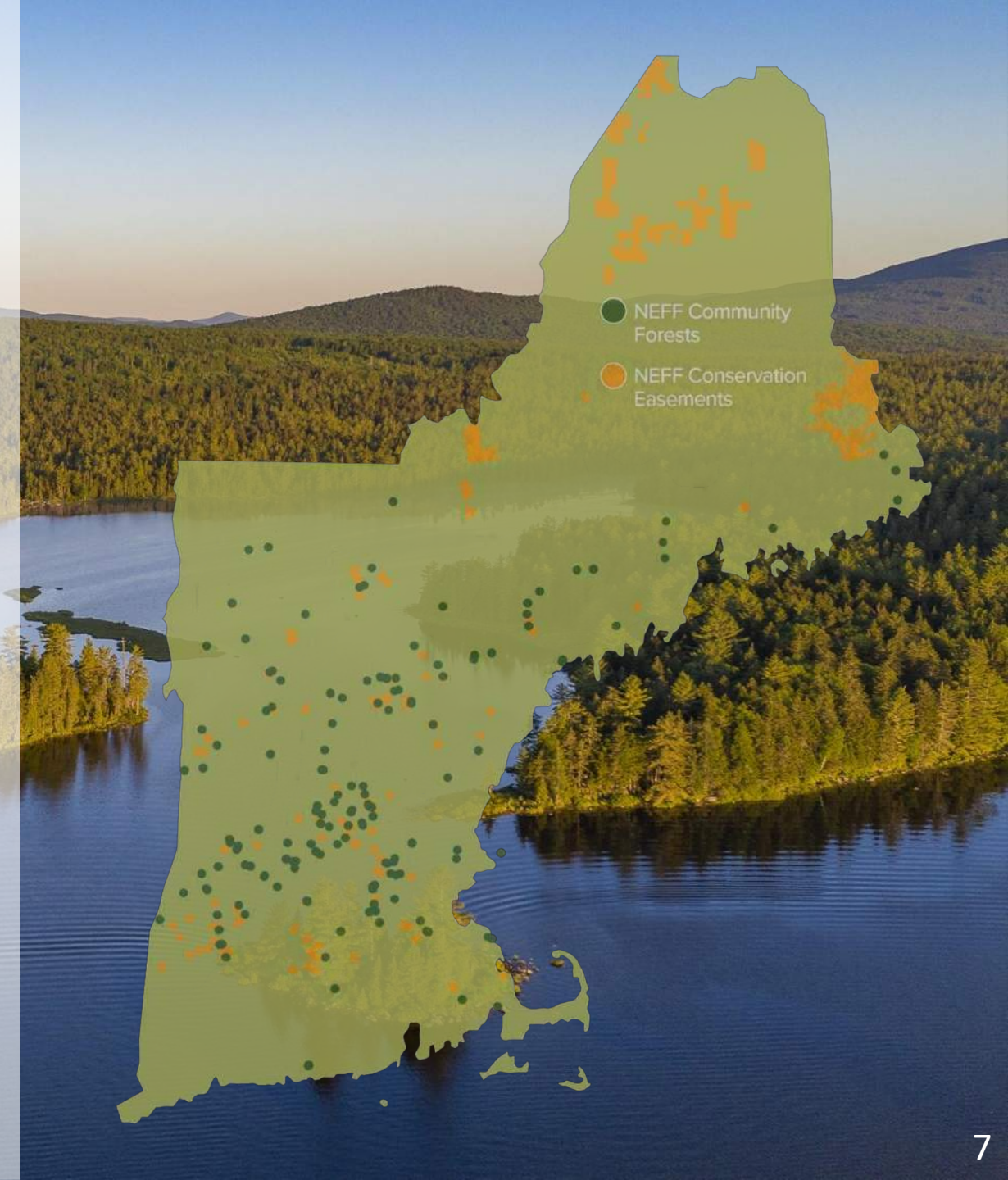
Conserving and Sustainably Managing Forests for Future Generations

1.2 Million
Acres Protected

National Impact:
Sixth largest land trust in the U.S.

Specialties:

- Working Forest Conservation
- Exemplary Forest Management
- Climate Change Mitigation



Programmatic Work

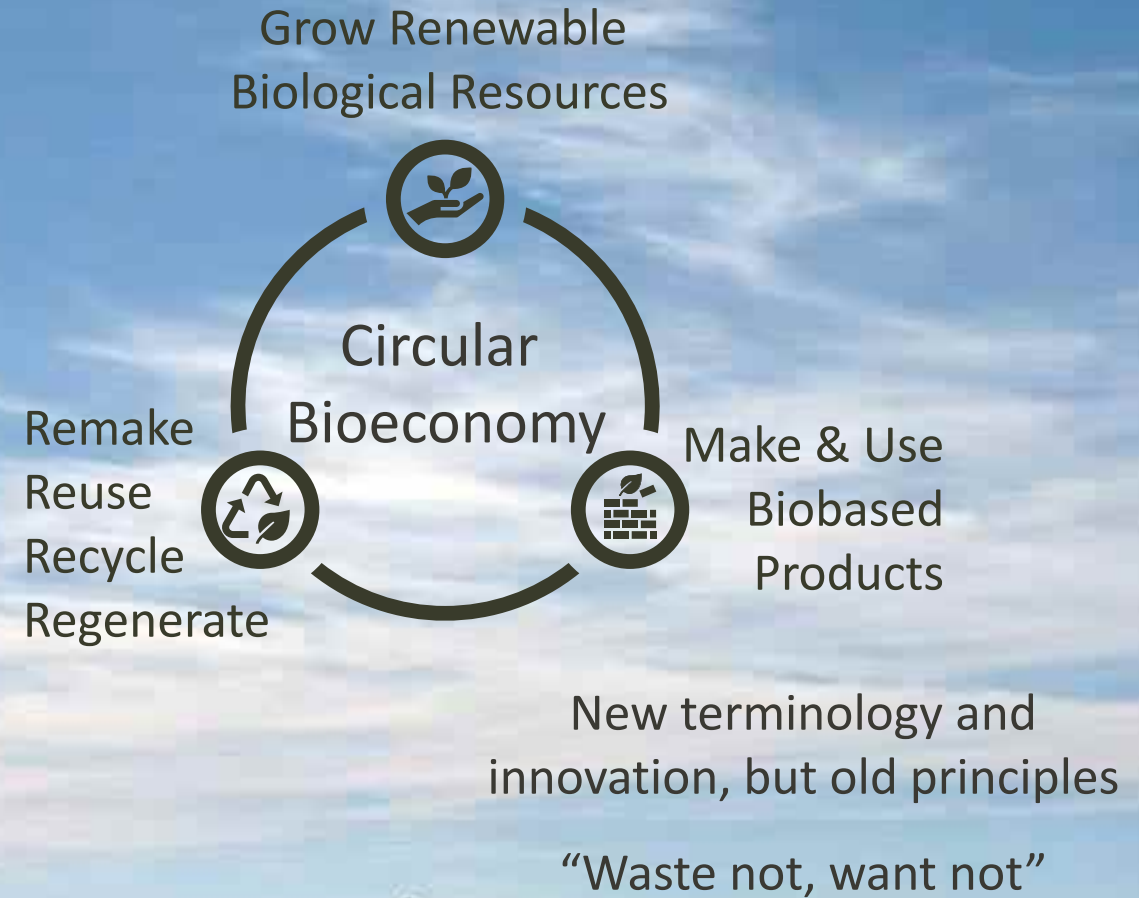
- Science
- Landowner Outreach
- Communications
- Coalition Building/
Cross-sector Collaboration
- Innovative Conservation
Finance & Funding



Addressing Climate Change

- ✓ Use less energy
- ✓ Use renewable energy
- ✓ Use renewable and/or recyclable materials
- ✓ Drawdown atmospheric carbon

↳ Forests and wood products
are part of this solution



Addressing the Housing Crisis

Insufficient supply = high housing costs

A local example...

Greater Boston area facing
“a crippling housing shortage”

According to Boston Foundation’s *2022 Greater Boston Housing Report Card*

Mass timber construction
is a link that connects these major issues

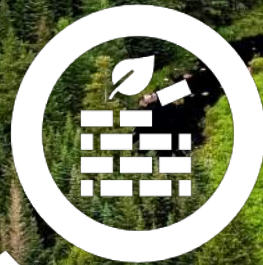
Climate
Change



Housing

Forests provide a natural solution...

Forest
Bioeconomy



Mass Timber:

Building With Wood for Environmental & Social Good

- ✓ Renewable, Biobased Material
- ✓ Housing Solution
- ✓ Biophilic Design
- ✓ Carbon Savings (Substitution)
- ✓ Carbon Storage
- ✓ Strong & diverse forest products markets that support good forestry
- ✓ Benefits for local forest-based economies

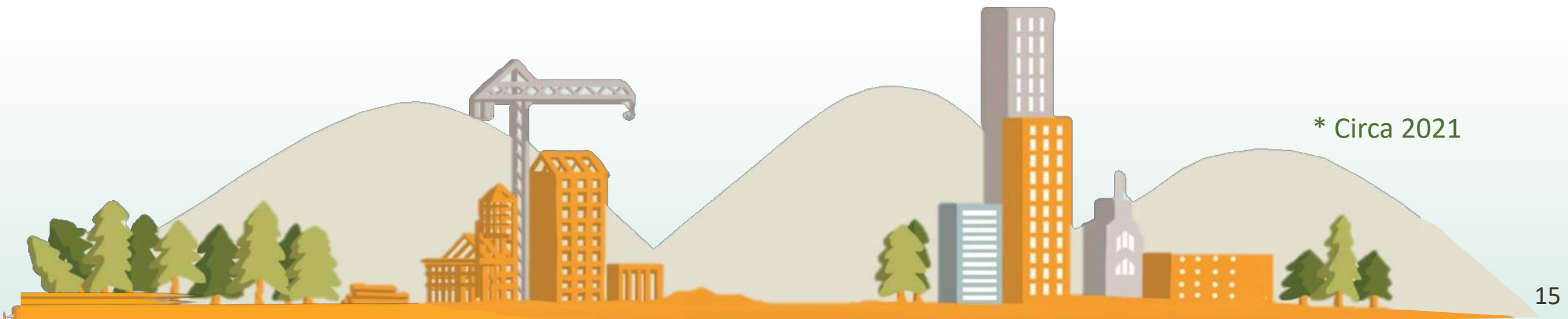


A Forest-to-Cities Vision



- ✓ Consider the whole system, not just individual components
- ✓ Build a more resilient, regional biobased economy
- ✓ Heritage industry + technology & innovation
- ✓ Strengthen connections between rural and urban communities & landscapes

Achieving the Forest-to-Cities [Mass Timber] Vision: NEEDS AND BARRIERS ASSESSMENT*

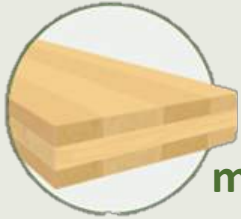


* Circa 2021

New England Forests: Key Attributes

- ✓ Land use history – predominantly second-growth forests that rebounded post-agricultural abandonment in 1800's
- ✓ Large intact forest area near dense urban centers
- ✓ Predominantly private ownership
- ✓ Significant protected land (1/4 of New England forests have been conserved, 8.6M acres)
- ✓ Abundant natural regeneration
 - ✓ Biggest near-term climate impacts from changing pest & disease dynamics, milder winters, and changing precipitation patterns (esp. heavy downpours)

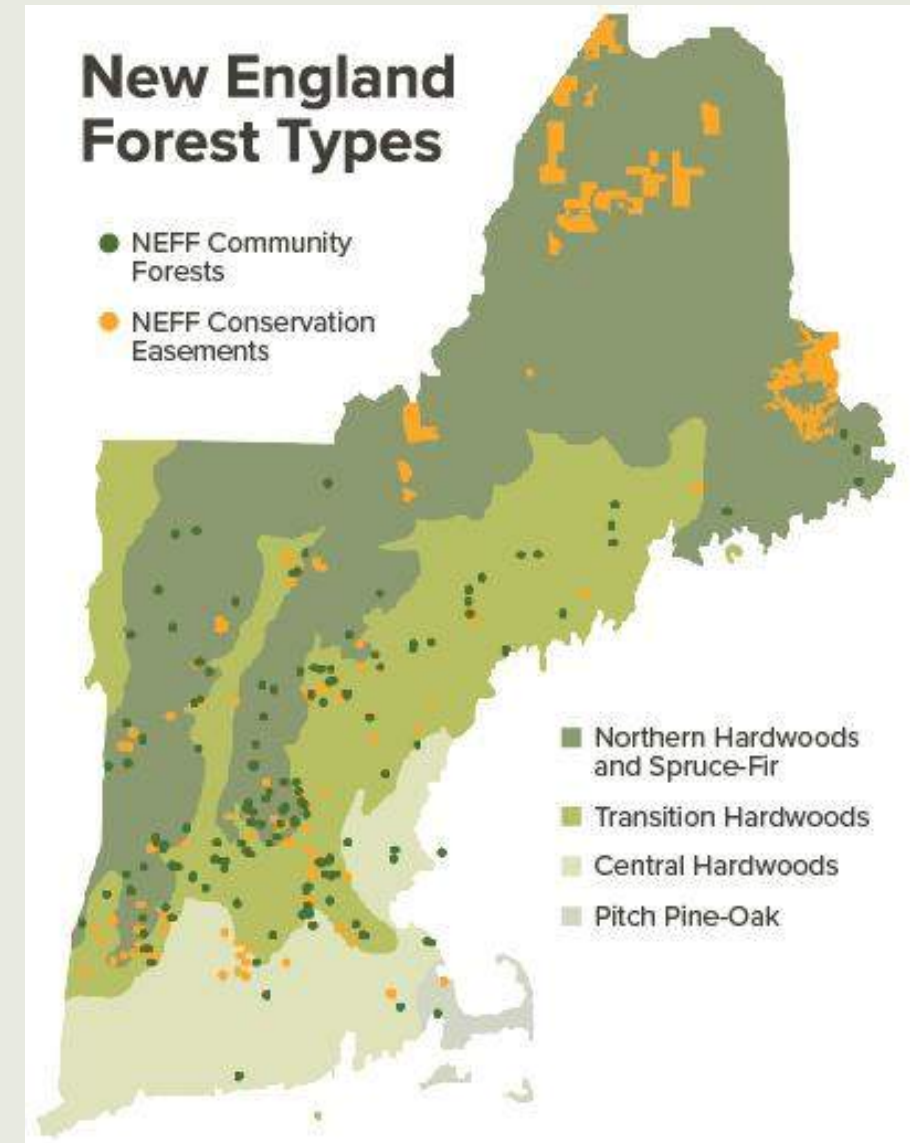
New England Forests: Species Mix



Mass Timber is typically made from softwood lumber

New England MT species:

- SPF-S (red spruce, black spruce, white spruce, Norway spruce; balsam fir; jack pine, & red pine)
- Eastern hemlock



New England Forests: Wood Supply



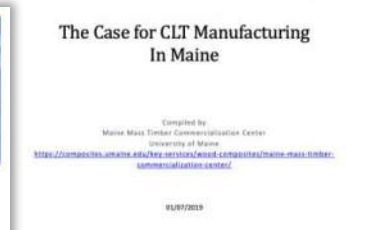
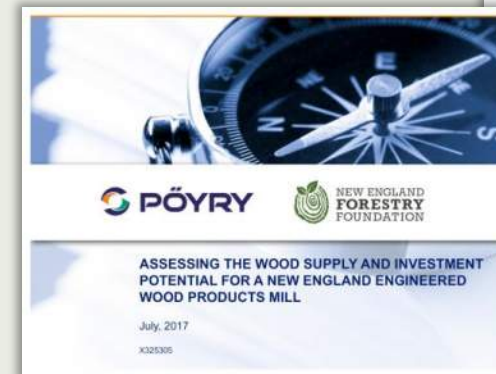
We grow more than we cut.

In New England, the Growth-to-Drain Ratio is roughly 2:1
(and much higher in southern N.E. states)



Our forests sequester 14% of our annual GHG emissions

“We estimate that fiber supply to a [mass timber] facility represents less than 2% of net growth.”

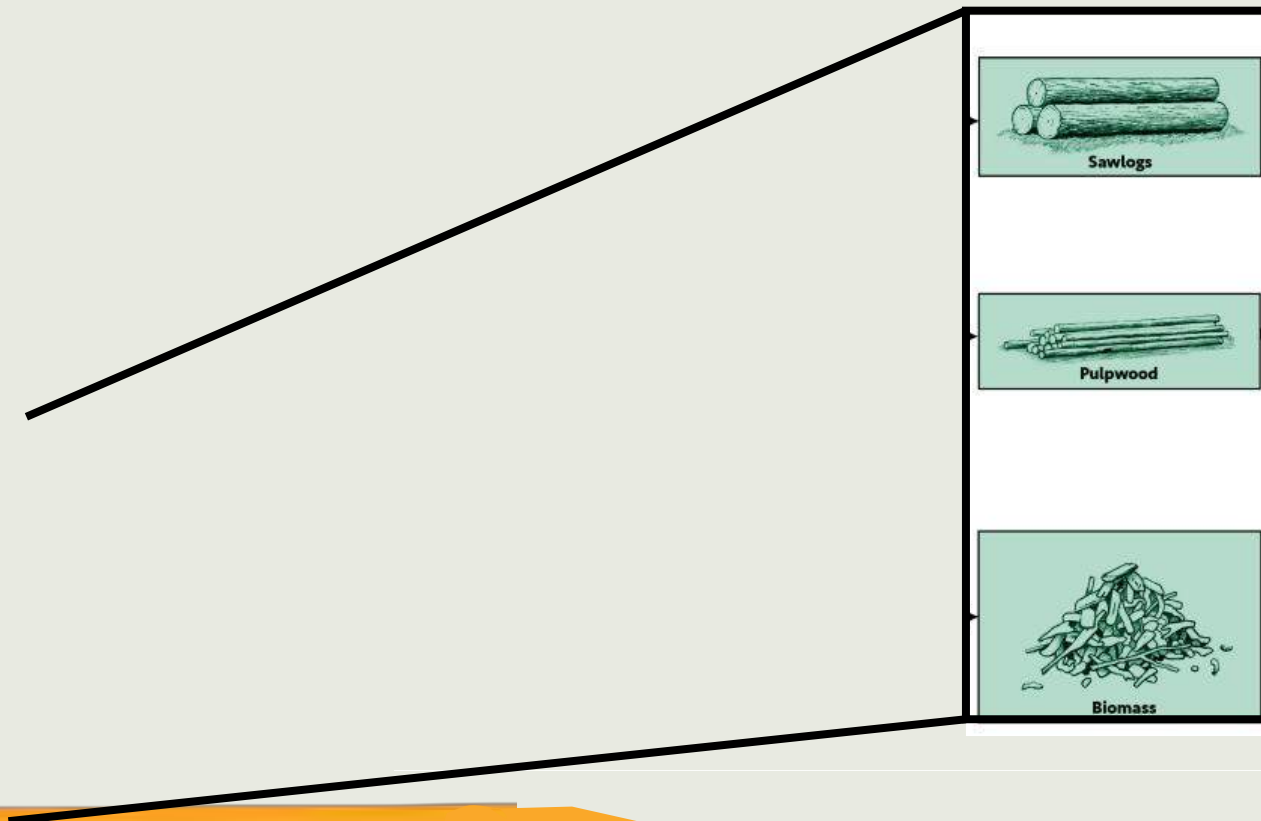


Forestry & Sustainability

There are forest- and stand-level characteristics we can alter through management to influence/alter/improve forest resilience, productivity, timber quality, wildlife habitat, carbon sequestration & storage, etc.



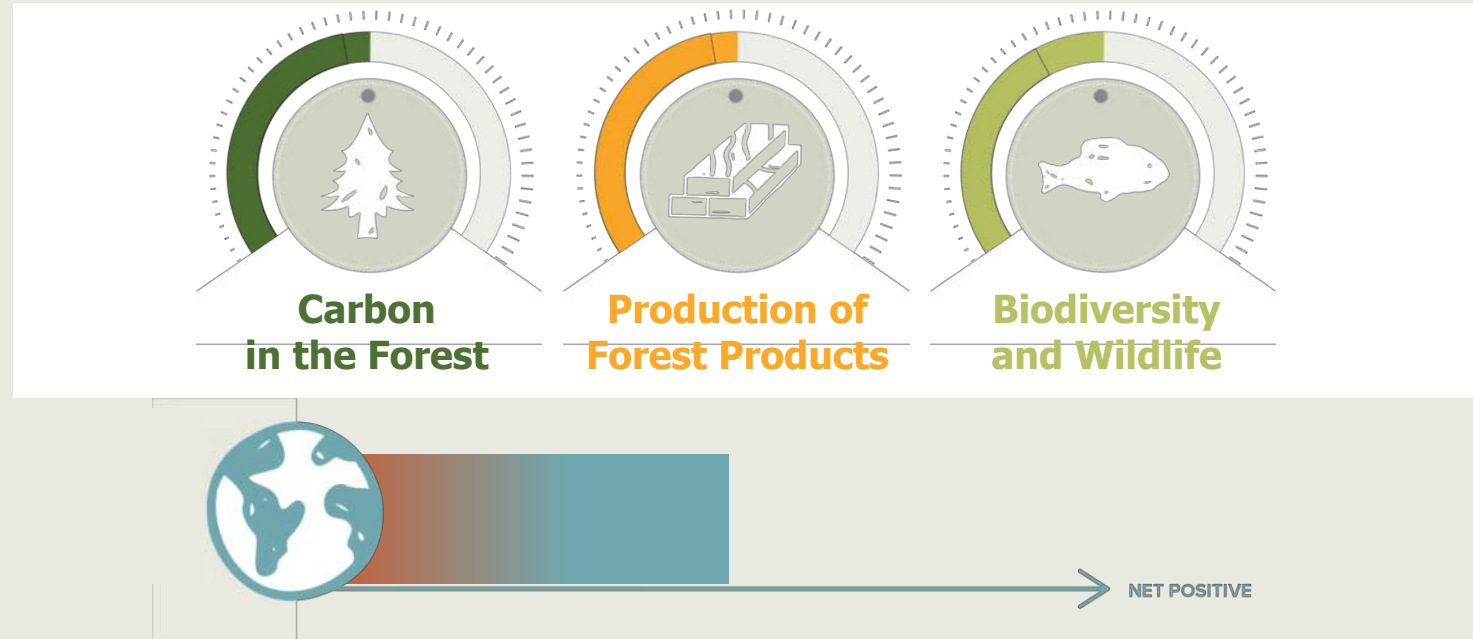
Forestry & Sustainability



Forestry & Sustainability



Forestry & Sustainability



→ Balancing for maximum benefit

Climate-Smart Forestry

Dual climate mitigation role of forests –
in the forest and in products



↳ Climate-smart forestry delivers on both fronts

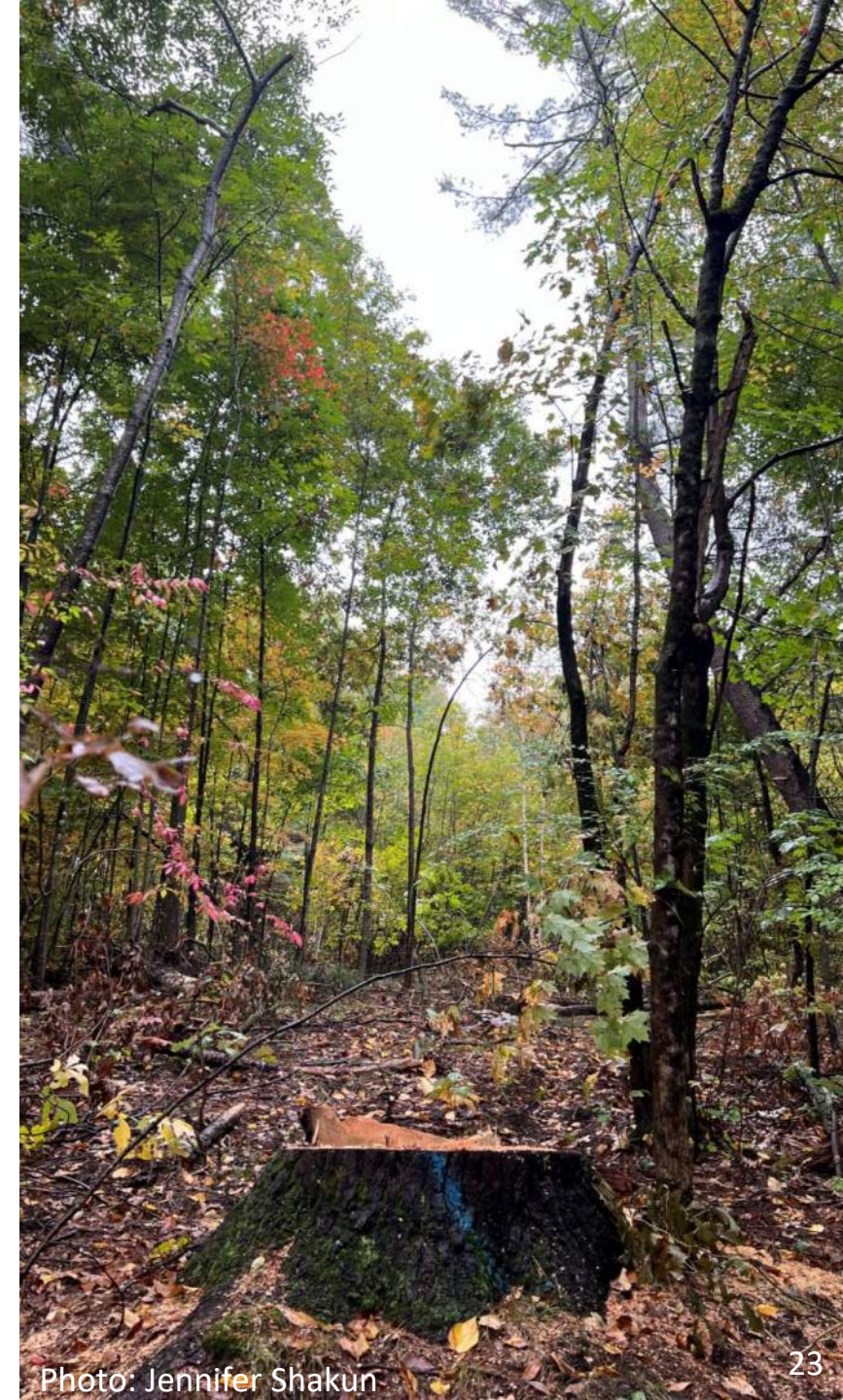
Mitigation

- ✓ Maintain or increase in-forest carbon stocks and sequestration rates
- ✓ Produce renewable wood products that can substitute for more carbon-intensive materials

Adaptation

- ✓ Altering the characteristics of forests (structure, composition, etc.) through management to make them more resilient to increasing stressors and changing conditions.

Resistance, Resilience, Transition



Exemplary Forestry

✓ Three co-equal goals:

**Enhance
Wildlife Habitat**

for full suite of
species present

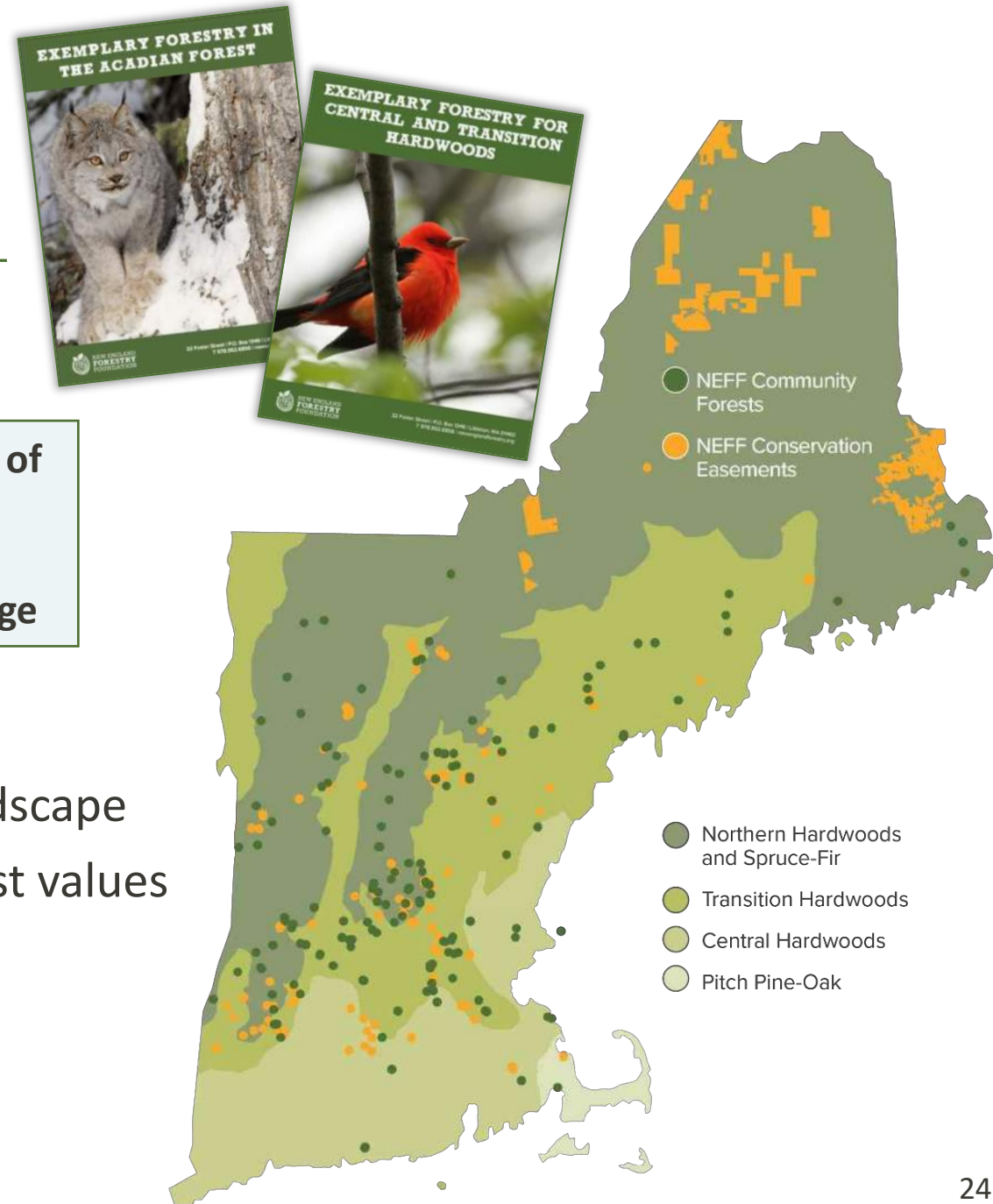
**↑ Wood Quality
& Quantity**

produced & retained in
stands over time

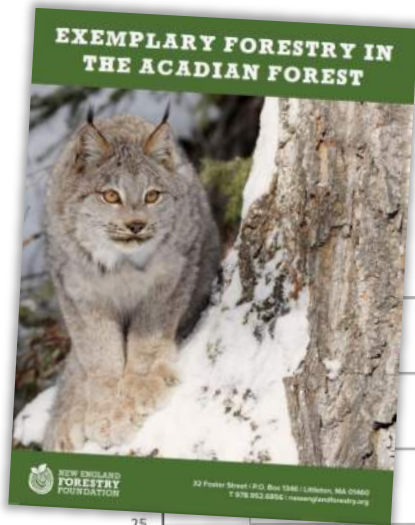
**Enhance Role of
Forests in
Mitigating
Climate Change**

- ✓ Operating at landscape scale
- ✓ Aims to fill habitat and ecological gaps in the landscape
- ✓ Management that is positive for full suite of forest values
- ✓ A complement to strategically located reserves

<https://newenglandforestry.org/learn/initiatives/exemplary-forestry/>



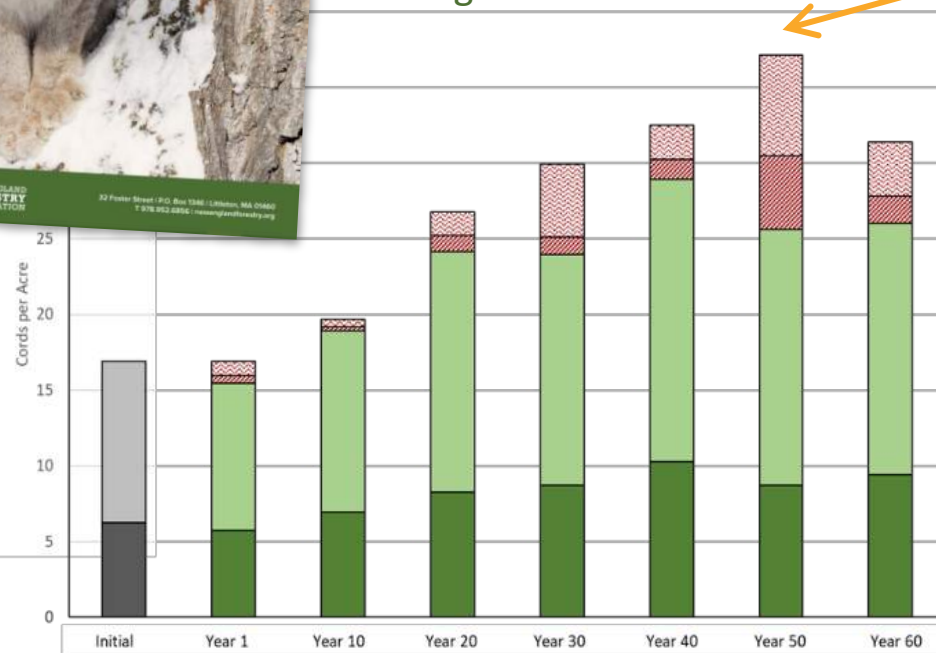
Management Matters



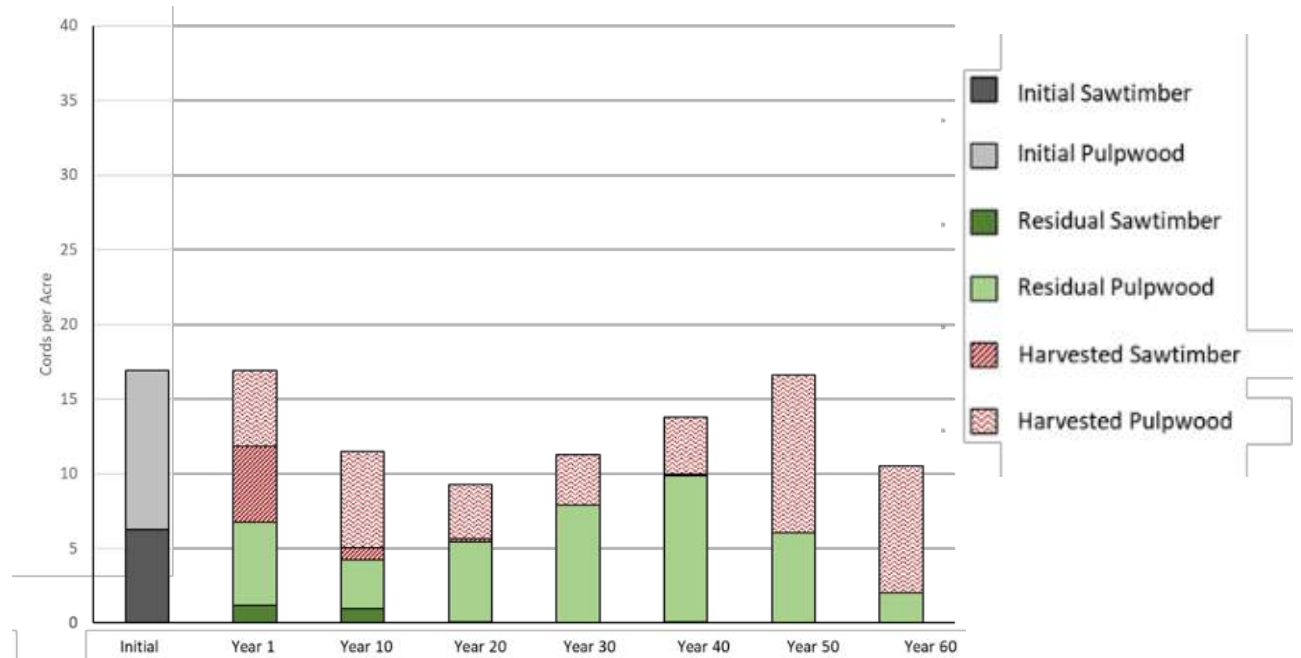
Gross growth (stocking and decadal yield combined) for a forest of **average condition** in western Maine

Maintaining harvest is essential to avoid **LEAKAGE** of carbon emissions

Under **Exemplary Forestry** Management



Under **Maximum Cash Flow** Forest Management



Forestry Best Management Practices (BMPs)

- ✓ Structures and practices implemented during a timber harvest that **protect soils and water quality** by preventing compaction, erosion, rutting, etc. and runoff of sediment or other material into nearby waterways, such as...
 - Water bars on skid trails
 - Use of temporary bridges for stream crossings
 - Armoring roads with slash and corduroy
 - Buffers around streams, wetlands, and other water bodies
 - Timing harvests during frozen ground conditions
- ✓ State-specific BMP guidelines may be required, quasi-regulatory, or voluntary (depending on the state)
- ✓ High degree of implementation and compliance across the region



Forest Management: Regenerating and Tending



Unthinned



Thinned 20 years ago

Regeneration practices

Regenerating the forest using expanding gaps that mimic natural disturbance processes in New England forests



Photo: Alec Giffen



Photo: Brian Milakovsky

Forest Practices Example: Legacy Tree Retention



Photos: Brian Milakovsky

Retain big, old legacy trees to maintain their carbon storage & sequestration and foster adaptation by adding structural diversity to the future stand

New England is a hub for innovation and investment in sustainable forestry and wood products



Northern New England
Precision Forest Management
and Advanced Forest
Bioproducts Engine

More info at: northernforest.org

Advancing Markets
for Producers (AMP) Initiative



Northeast Timber Production
& Market Expansion Program

More info at: newenglandforestry.org



Maine Forest Bioproducts
Advanced Manufacturing
Tech Hub

More info at: mainetechhub.us

Advancing Markets for Producers (AMP)

NEFF's "Northeast Timber Production & Market Expansion Program"



- ✓ Incentives and technical assistance to implement forest management practices that accelerate the development of high-quality wood products.



- ✓ Build markets for the full range of forest products (including low-grade material) so that such practices will eventually be self-sustaining and economically viable.

<https://newenglandforestry.org/forest-management/advancing-markets-for-producers/>

Advancing Markets for Producers (AMP)

Market development components include...

1. Build Market Demand for Wood Building Materials

- General Wood Utilization Marketing & Outreach
- Mass Timber-Specific Design Guidance & Inspiration

2. Pilot Projects to Demonstrate Local/Regional Wood Use



Photo: Jennifer Shakun
New Hampshire

Take Homes

- ✓ Building with wood can benefit local/regional forests, communities (both rural & urban), and the climate
- ✓ New England has a strong foundation on which to build a local mass timber supply chain—designers and builders can bring the demand!
- ✓ Sourcing matters – good forestry is site specific and balances multiple values
- ✓ Mass timber and off-site wood construction is part of a wave of investment in innovative forest bioproducts