

Barriers for emerging tree planting initiatives for global change

Pete Clark



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Rebecca Montgomery, Mike Reinikainen, Christopher Woodall, Christopher Zimmerman

Global attention on tree planting as climate solution



August 7th, 2022

H.R. 2049 - REPLANT Act

*Repairing Existing Public
Land by Adding Necessary
Trees Act*

Also regional attention on artificial regeneration




Regenerate NY:

Through Regenerate NY, private landowners can receive financial assistance for projects on their property that support healthy forests and forest regeneration. Any individual, partnership, for-profit/not-for-profit entity that owns 10–1,000 acres of forestland or land suitable for establishing forestland can apply.

photo credit: mywoodlot.com

All applicants must use Grants Gateway to apply. Pre-registration required, see our webpage for more info.

Find out more and get started today at <https://www.dec.ny.gov/lands/119950>

Eligible projects include:

- Afforestation and reforestation
- Forest stand restoration
- Competing vegetation control
- Deer enclosure fencing

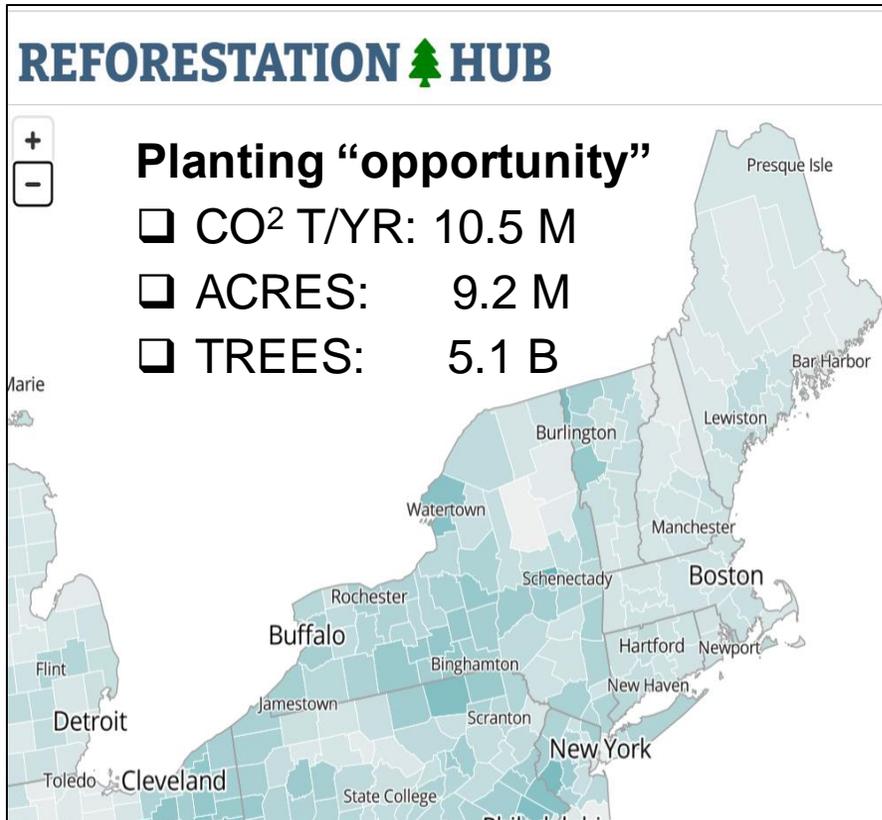
Helping Private Landowners Grow the Forests of the Future

NEW YORK STATE Department of Environmental Conservation

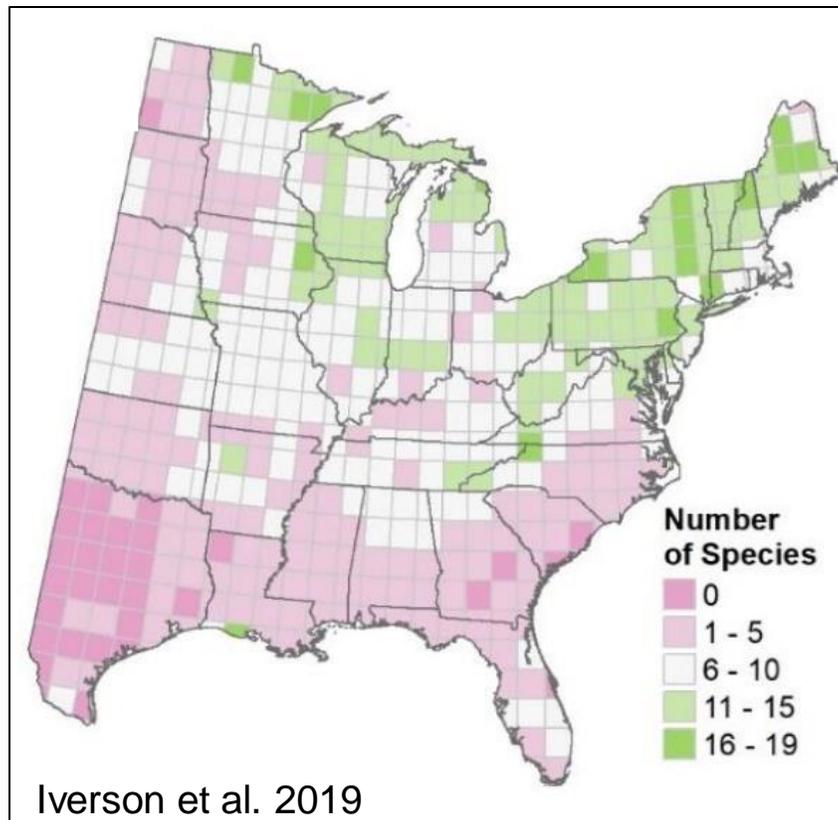


Increasing need for planting in Northeast?

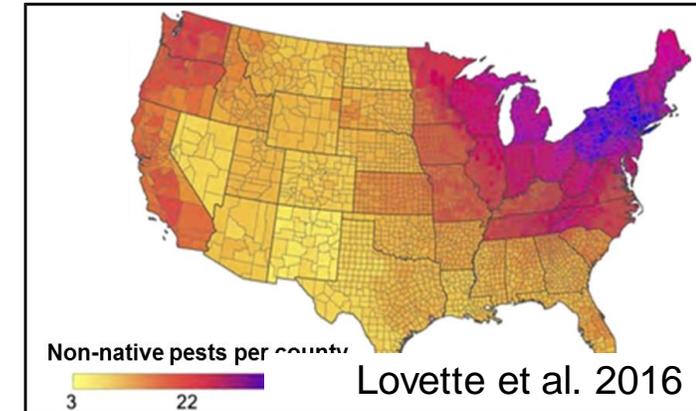
Carbon Mitigation



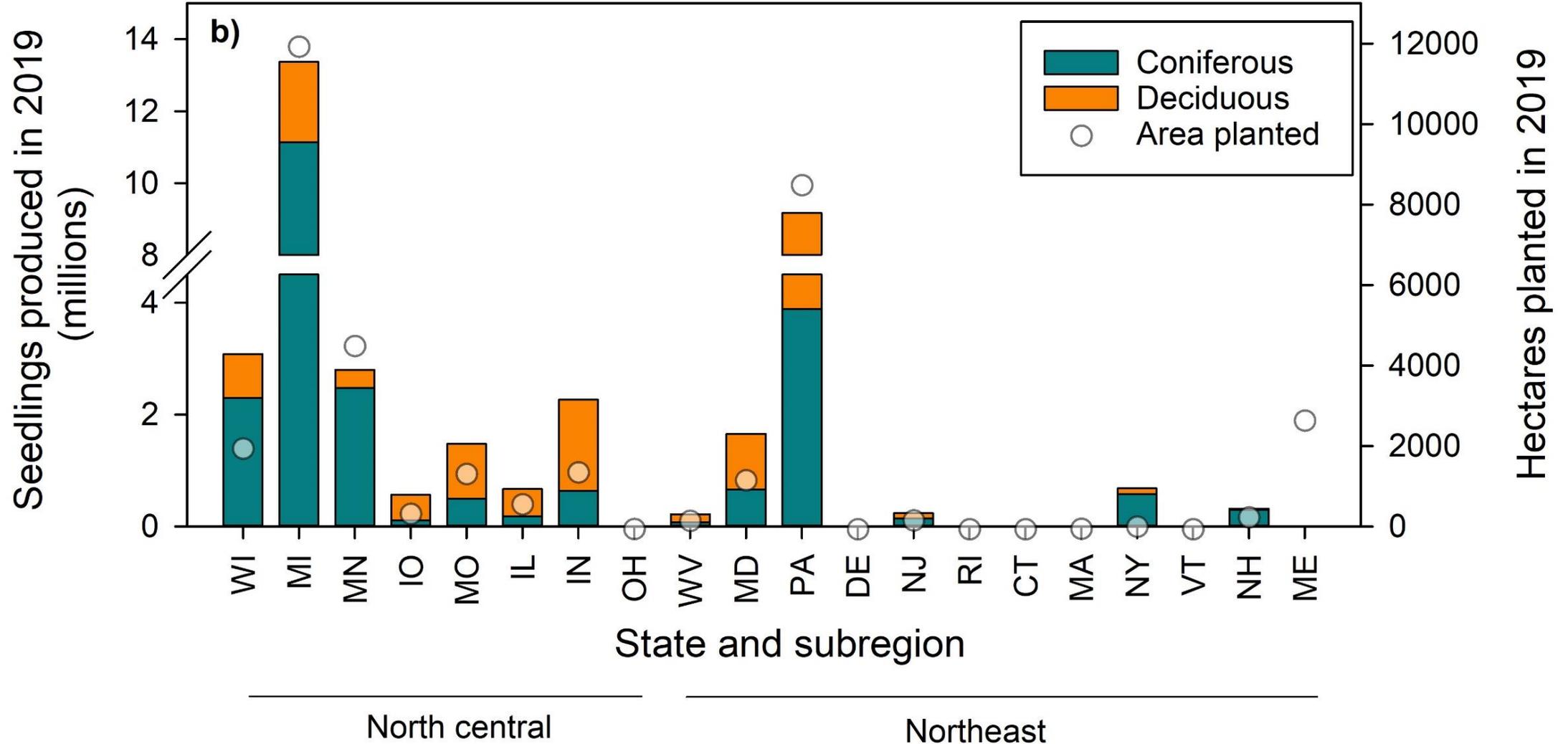
Assisted Migration



Adaptation & Restoration

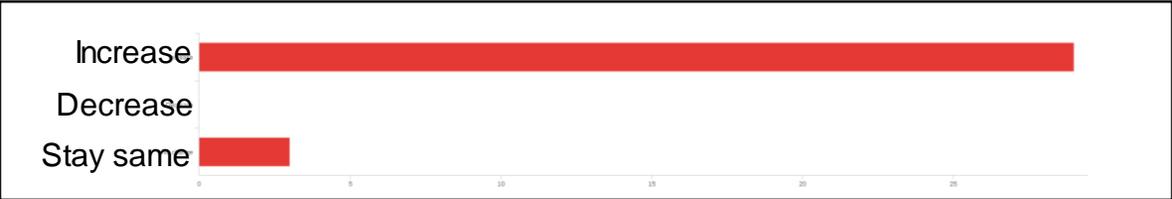


Artificial regeneration traditionally not large part of NE forest operations

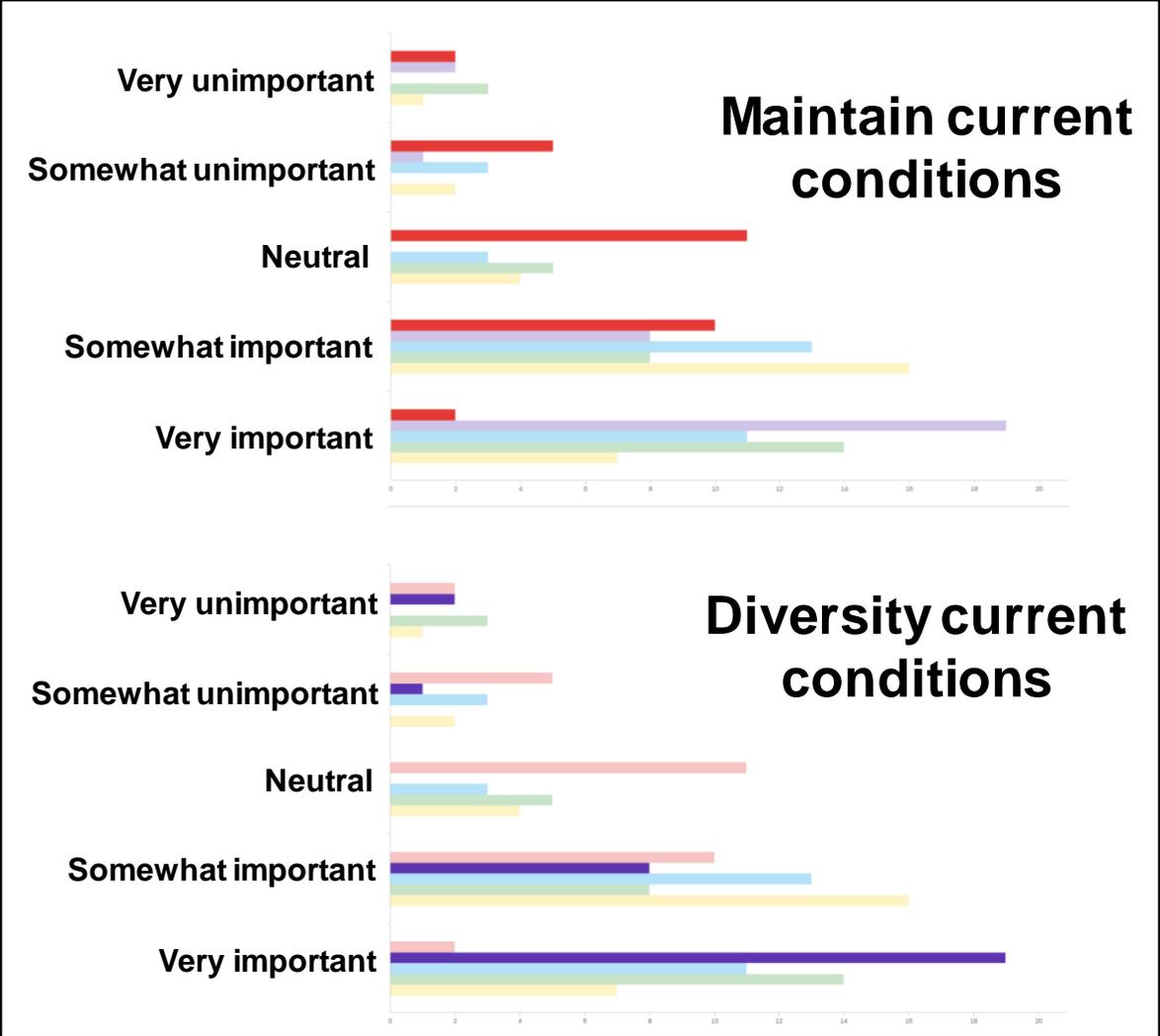


2022 survey of NE foresters indicates increase

Do you expect the number of planting projects to change?



Why do you plant?



Does current forest nursery capacity reflect the growing need?



Historical emphases of forestry nurseries

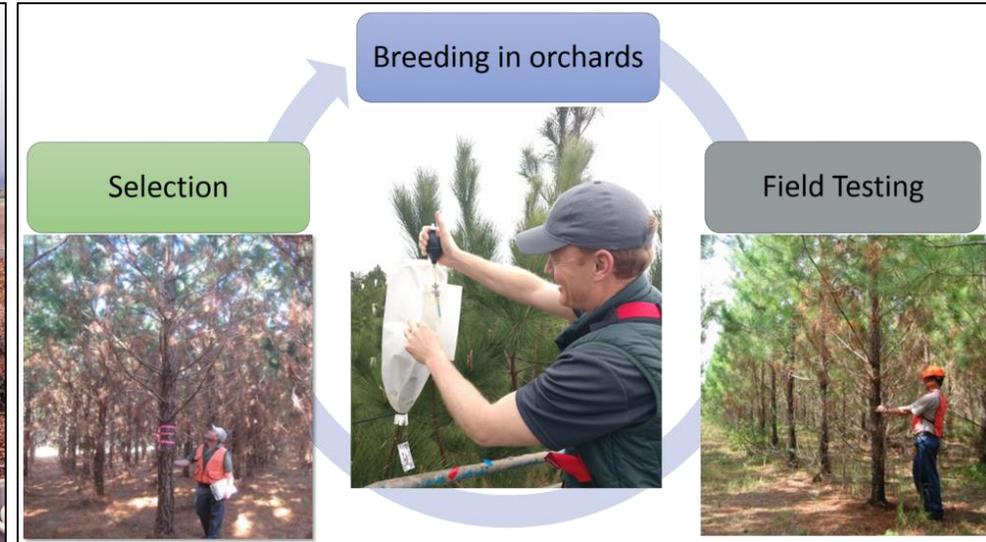
From Dumroese *et al* (2005):

1900s to 1930s: Restoration Response

1930s to 1950s: Conservation and Jobs Creation

1950s to 1990s: Responding to the Public's Demand for Timber

1990s to Present: Return to Restoration



The New York Times

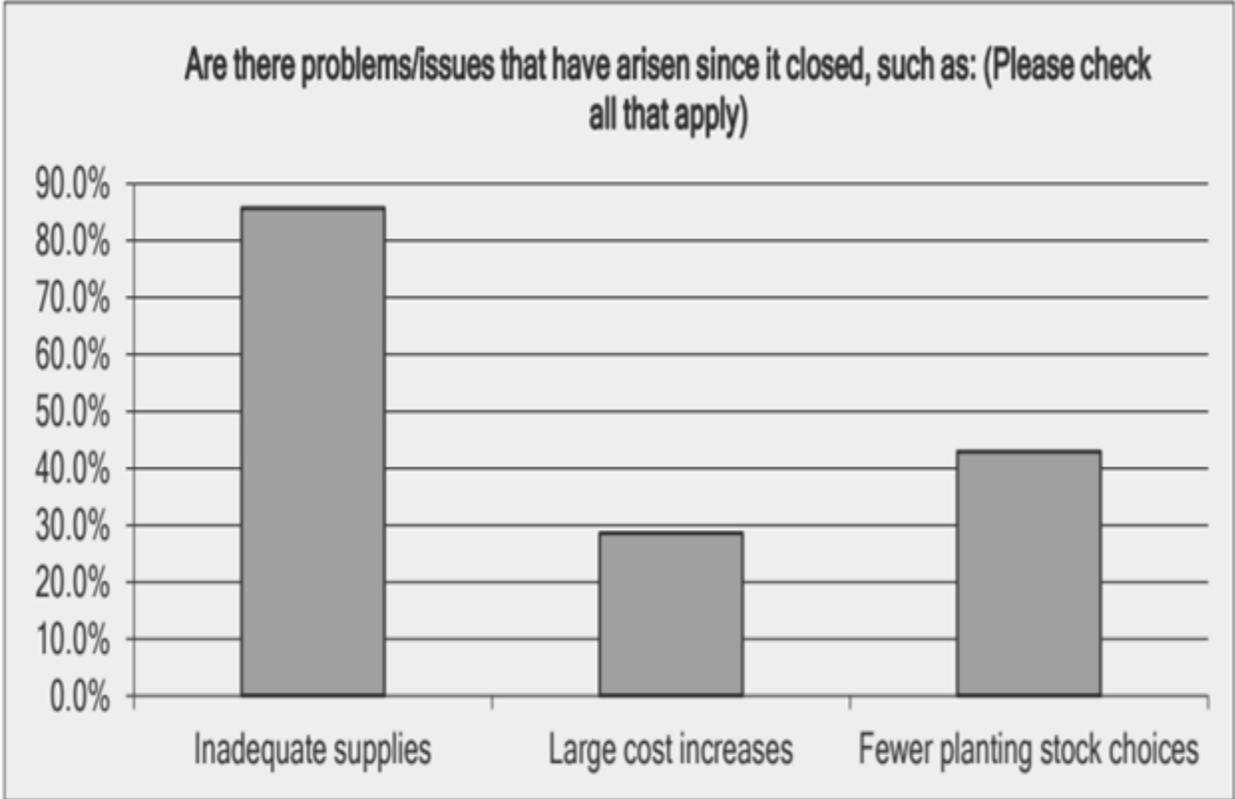
Maine Growers Assail Tree Nursery's Closing

13NEWS News Watch Weather Sports Community Jobs What's On About Us

WEST VIRGINIA

Last state tree nursery in West Virginia shutting down

by Lane Ball
Posted: May 13, 2021 / 10:05 PM EDT
Updated: May 13, 2021 / 10:27 PM EDT



NASF (2016)

Anecdote: NH State Forest Nursery

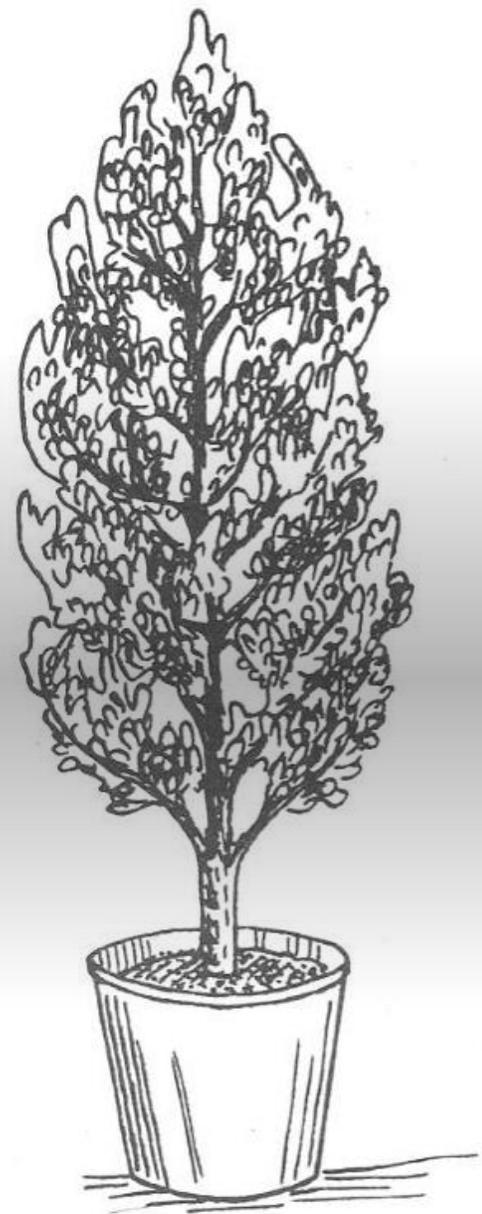
A photograph of a forest nursery. In the foreground, several workers are engaged in planting or tending to young trees in rows. One worker is using a grey plastic container to move plants. In the middle ground, a red tractor with a tillage implement is being operated. The background consists of a dense forest of tall, thin trees, likely pines or spruces, under a clear sky.

“These last few years, we’ve been pretty much selling out of everything that we have available,” said Billy Kunelius, the nursery manager.

“But I think it also has to do with more public knowledge of climate change and the ability to mitigate climate change and aid in carbon sequestration through the planting of trees.”

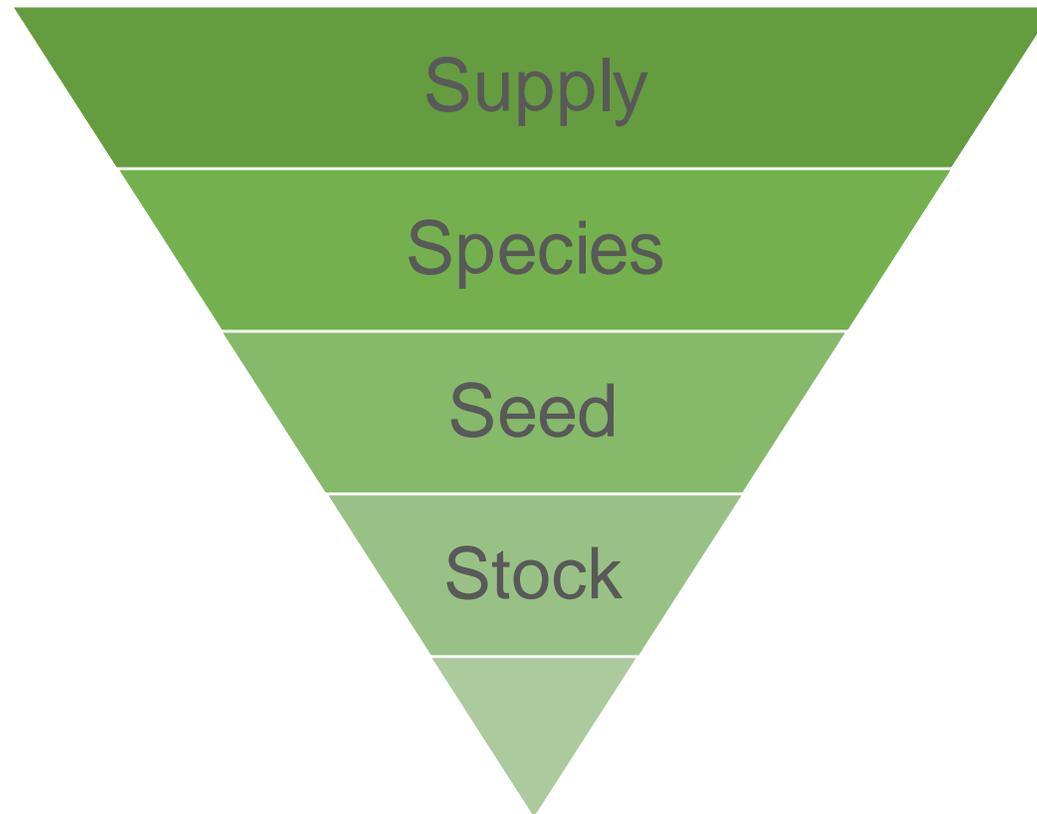


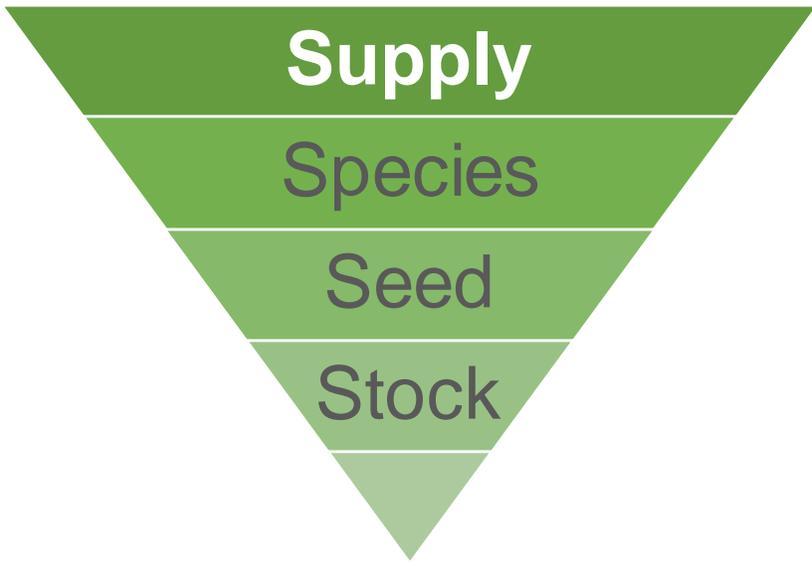
Speculative Investment



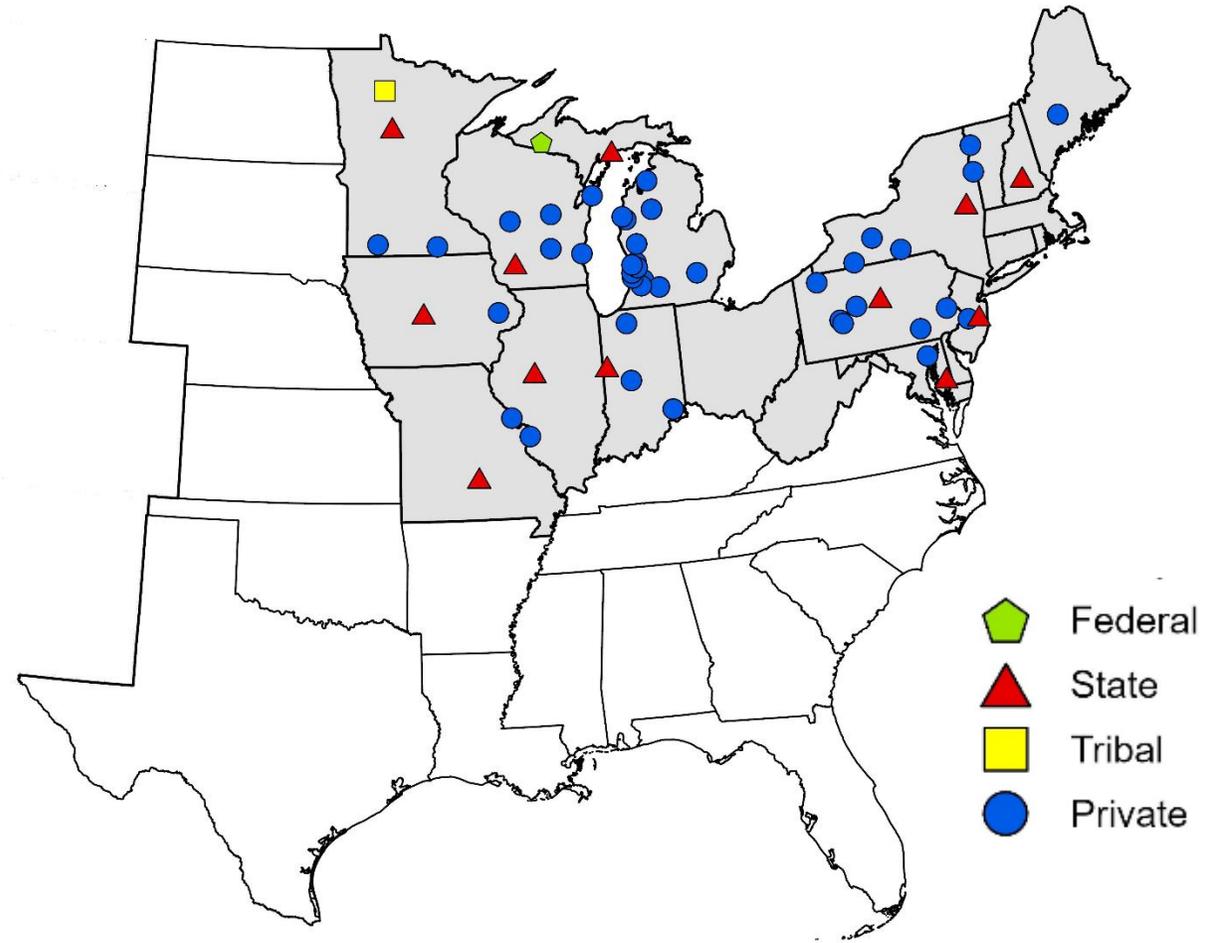
Barrier:

A need for forest nurseries to supply increasingly diverse seedlings to support growing planting efforts

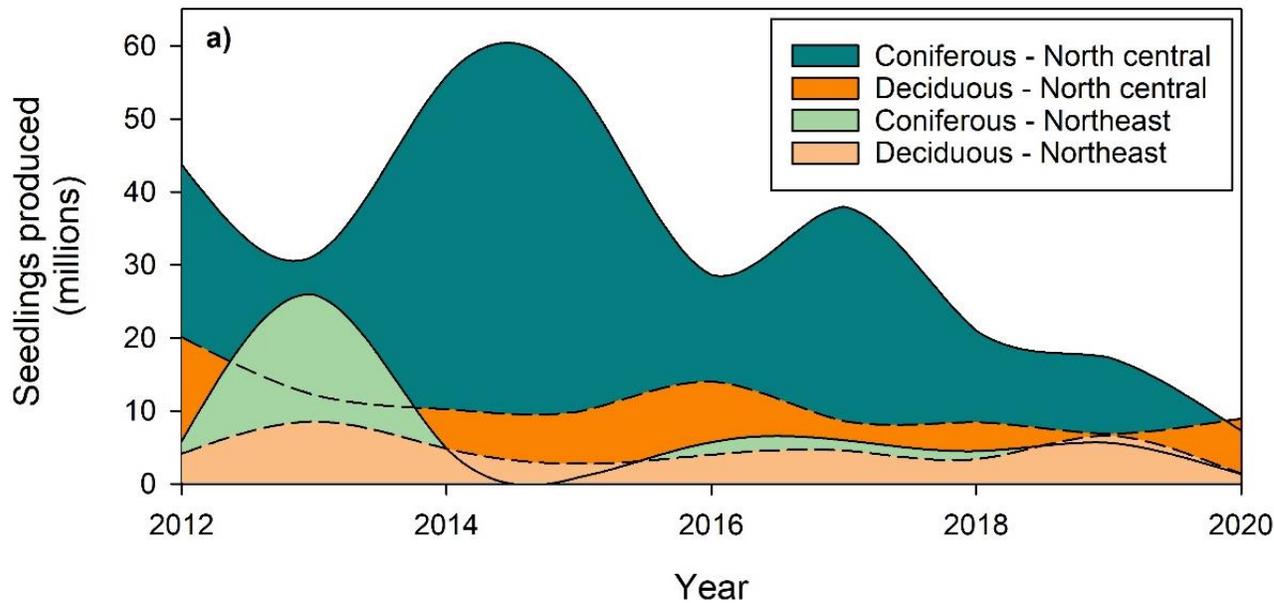


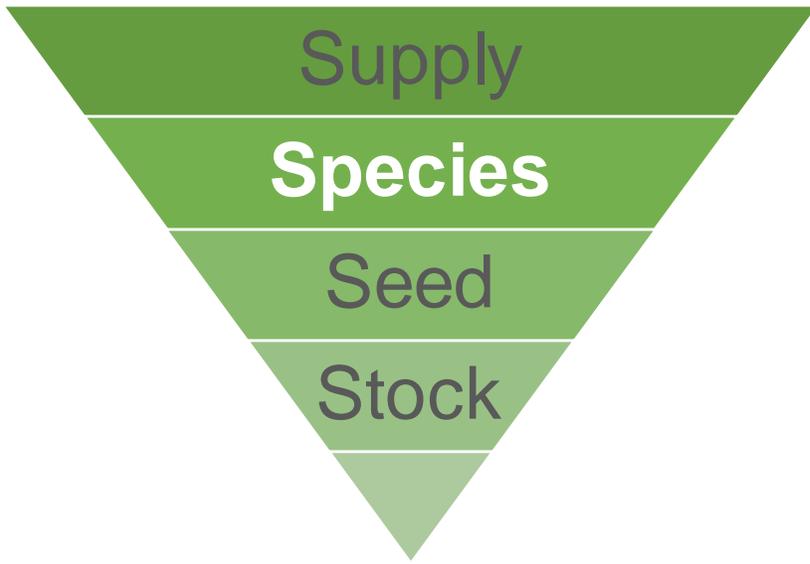


Northeastern forestry nurseries



Regional seedling production



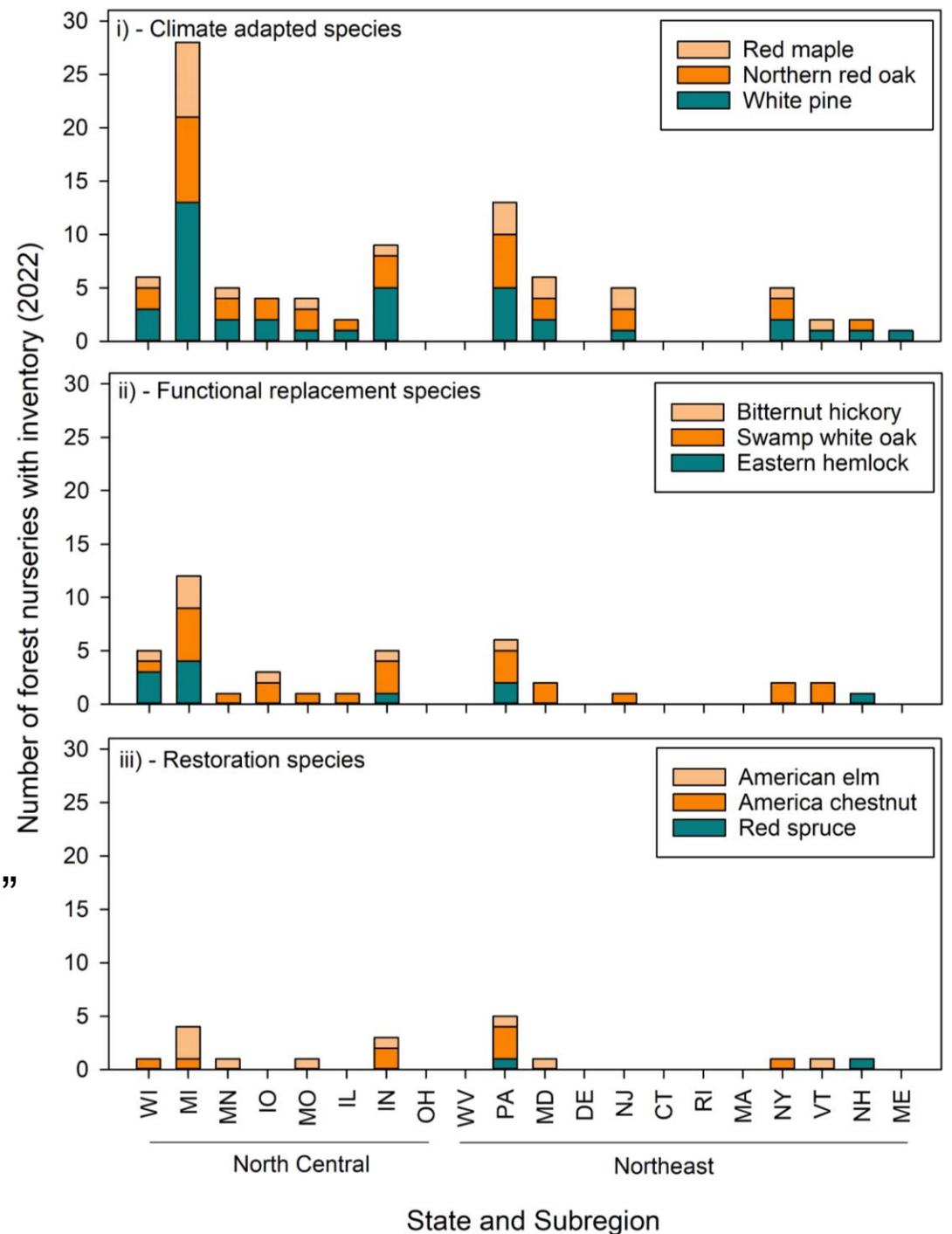


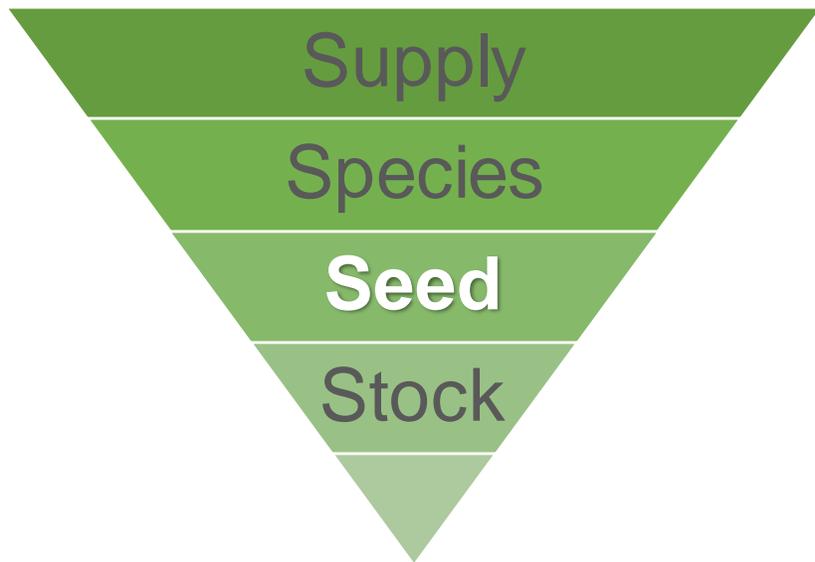
Planting strategies for global change

Climate adapted: species with projected increases in habitat under climate change

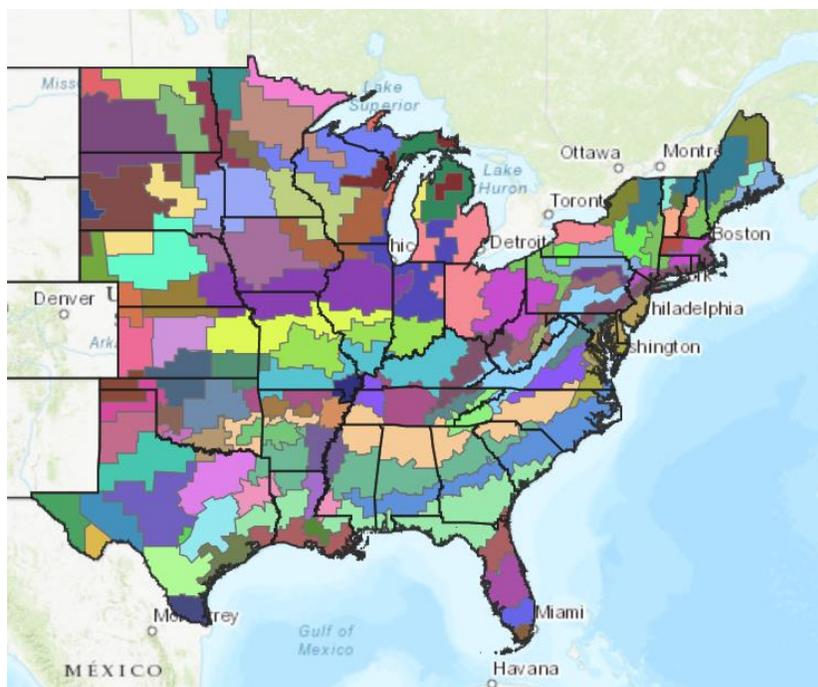
Functional replacement: species targeted to “replace” other species (and functional traits) in decline

Restoration species: degraded but otherwise ecologically and culturally important to restore

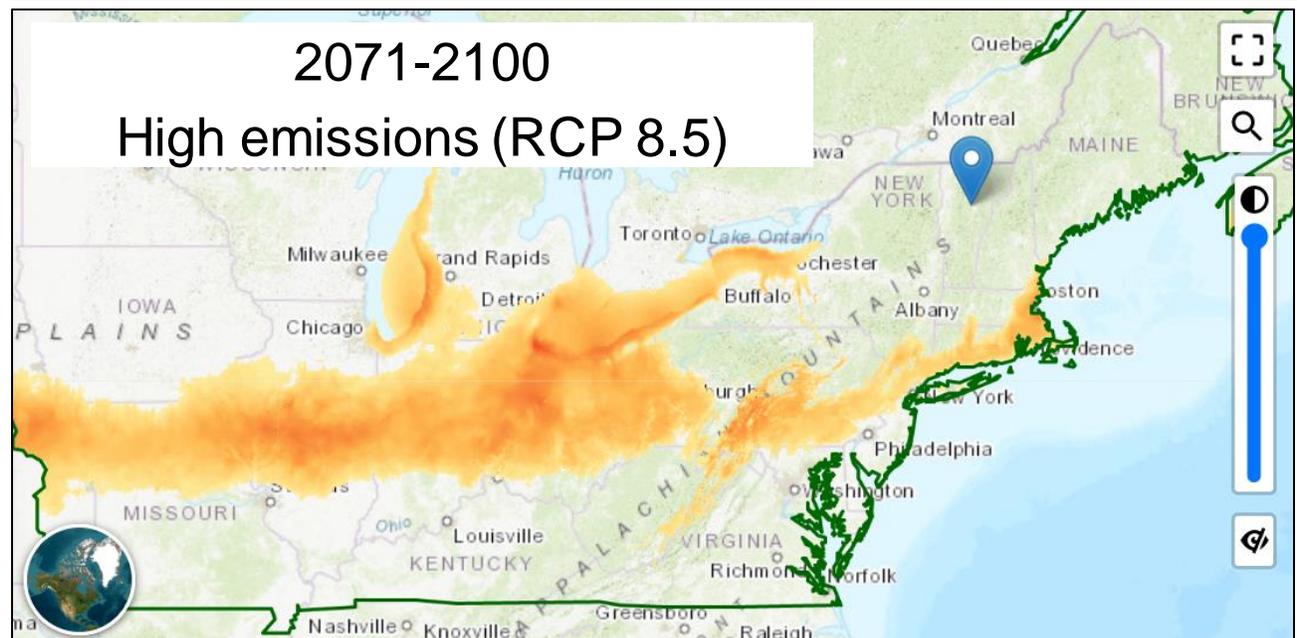
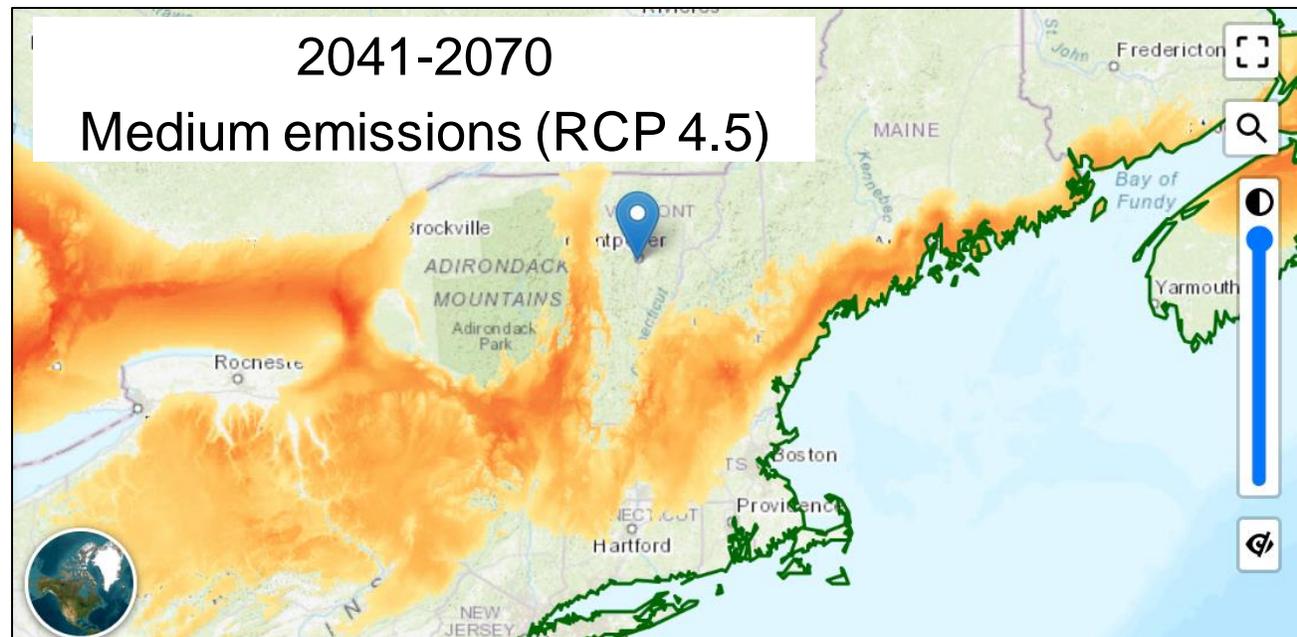




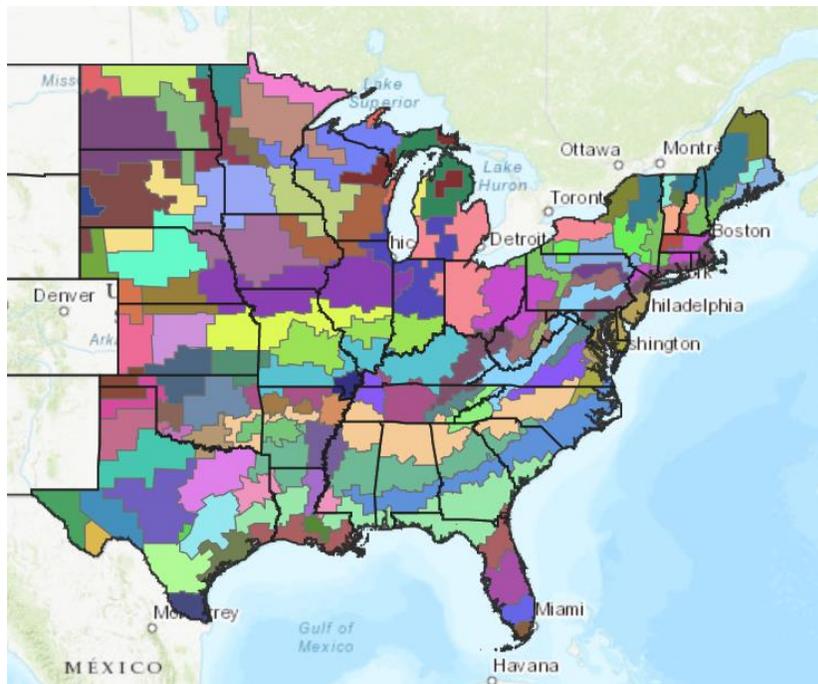
Eastern seed zones



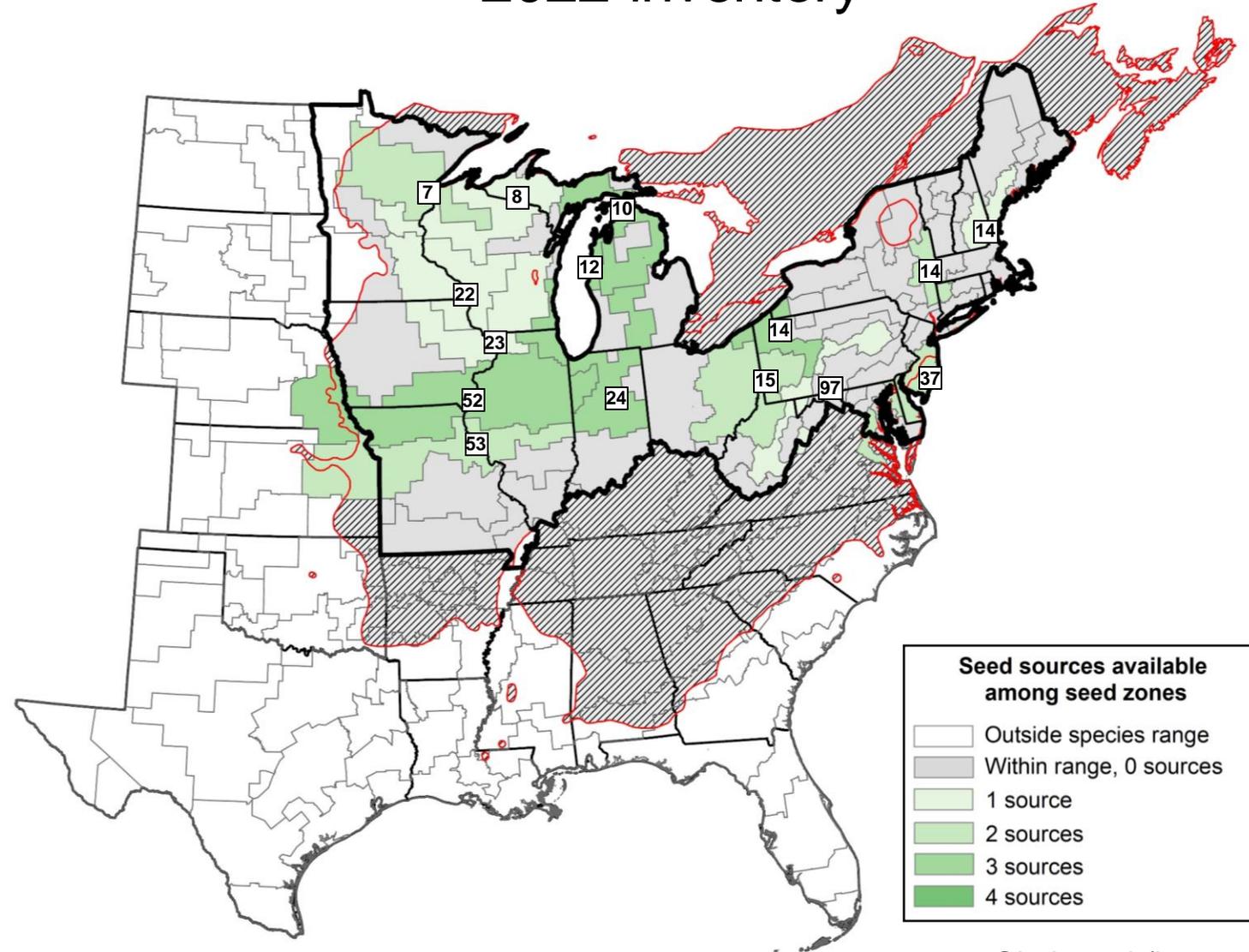
Shifting seed zones under CC?

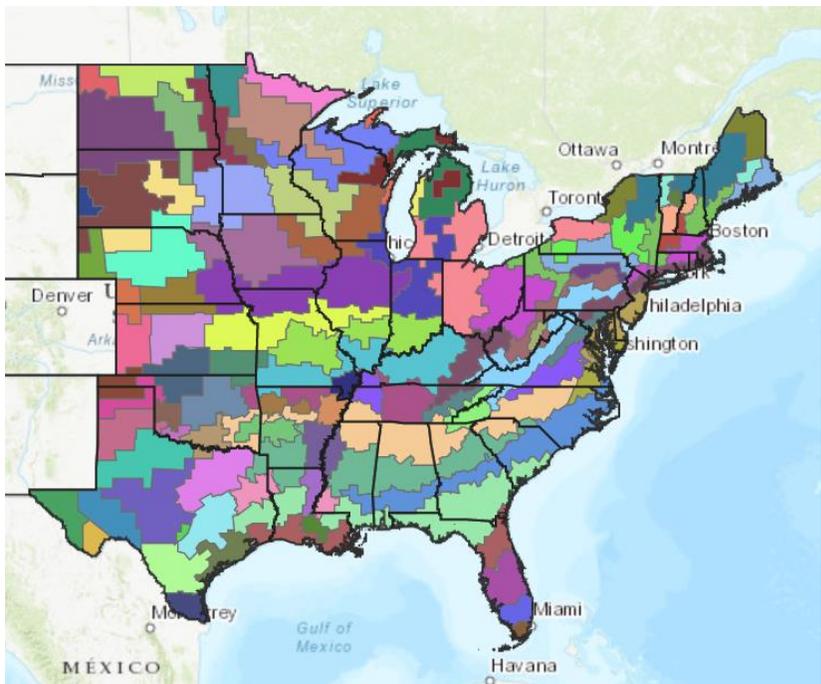
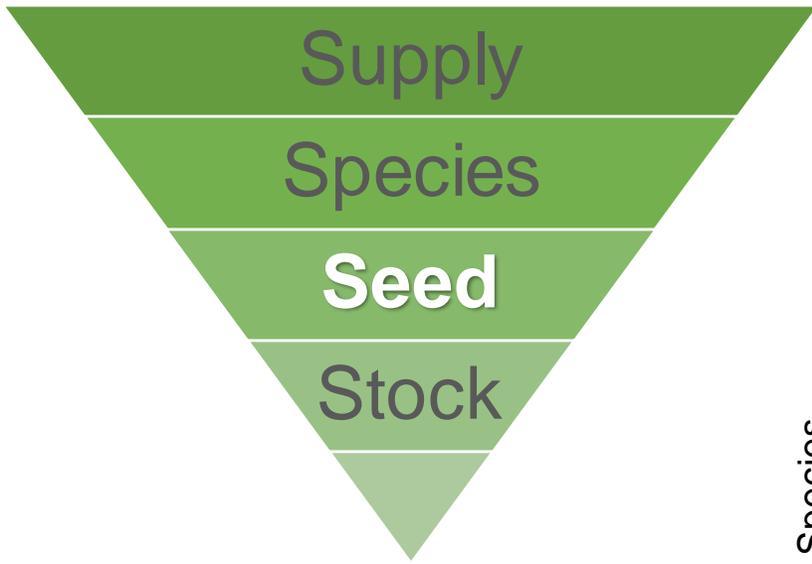


Supply
Species
Seed
Stock

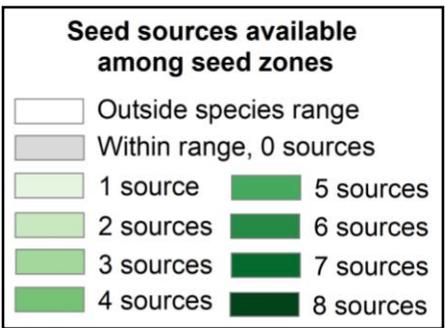
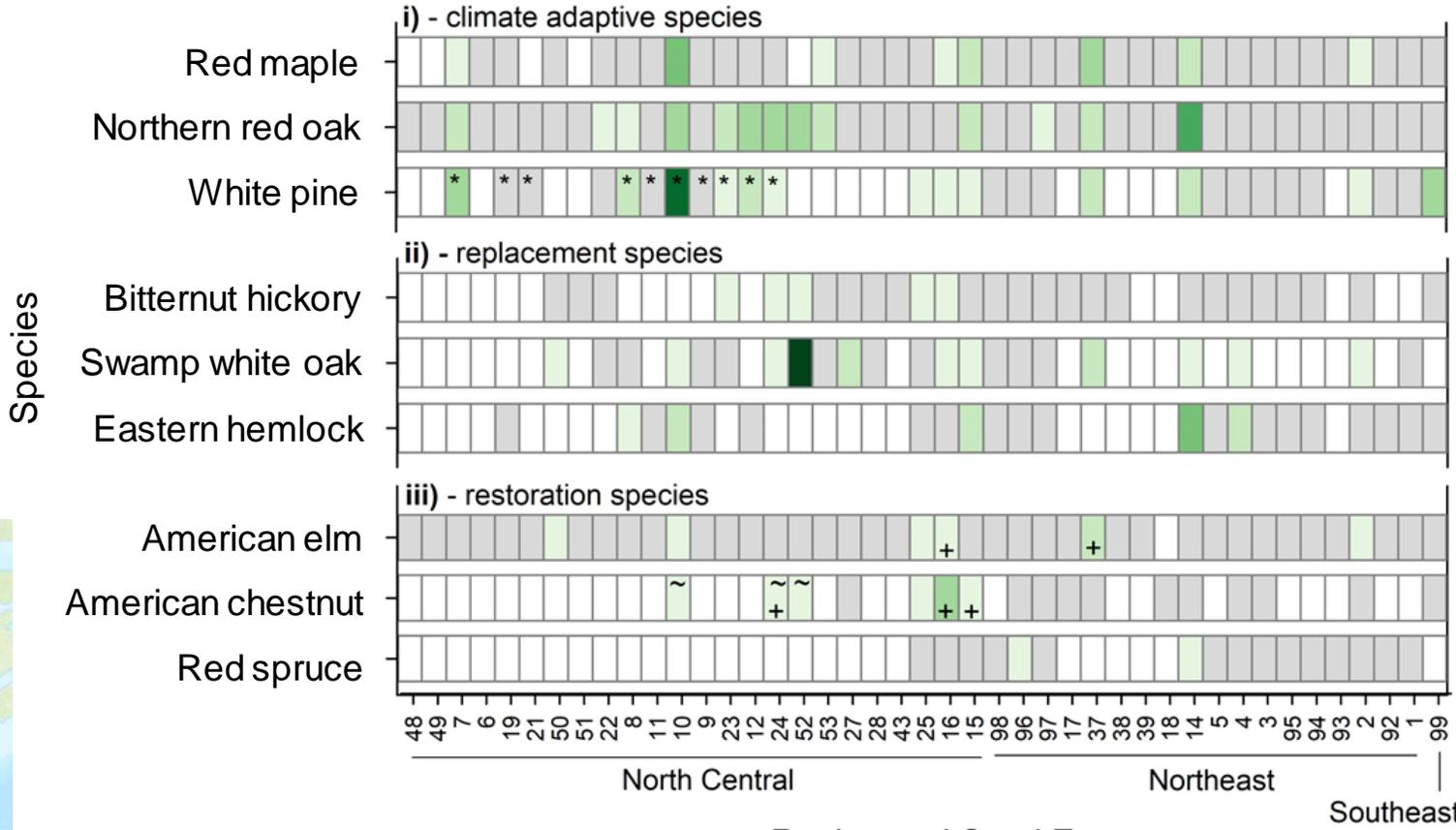


Northern red oak seedling seedlots 2022 inventory



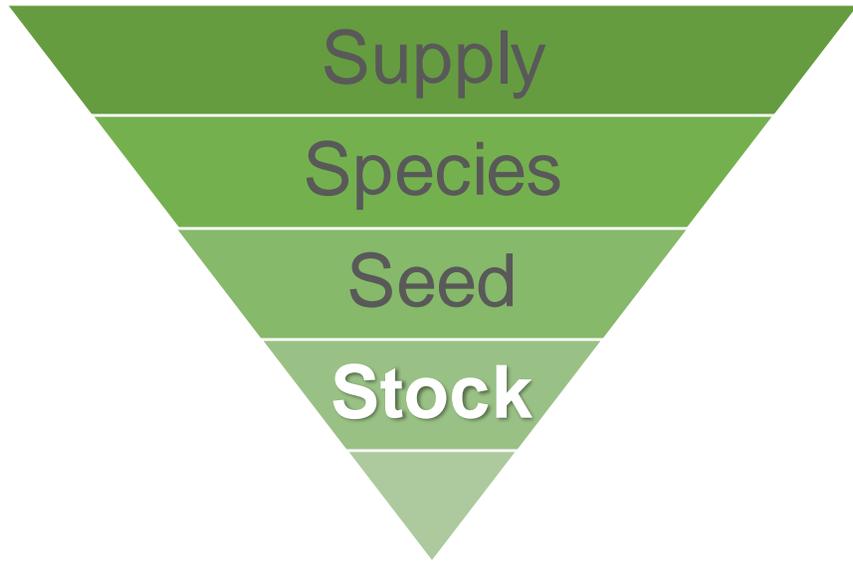


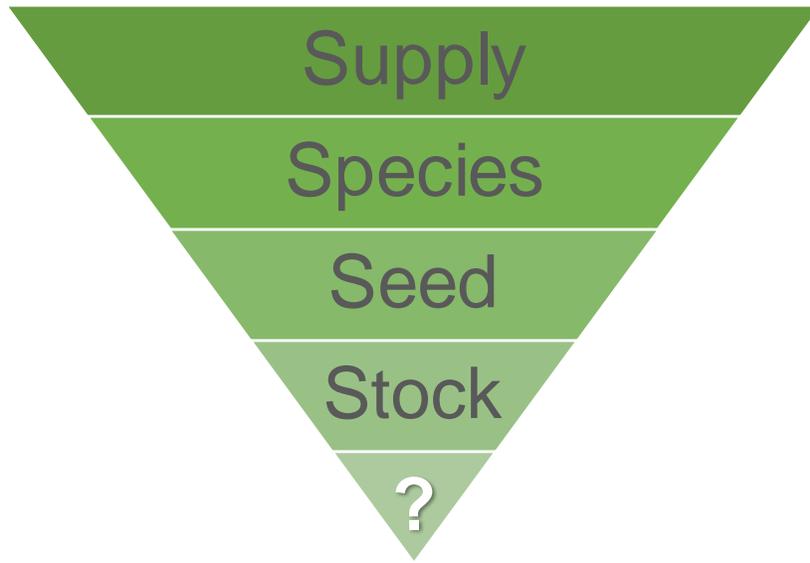
2022 seedling seedlot availability



Region and Seed Zone

* 8 sources reported as "Lake states"
 + Disease resistant hybrid
 ~ Outside species historical range





Human Dimensions:

- Uncertainty, knowledge gaps, and best practices

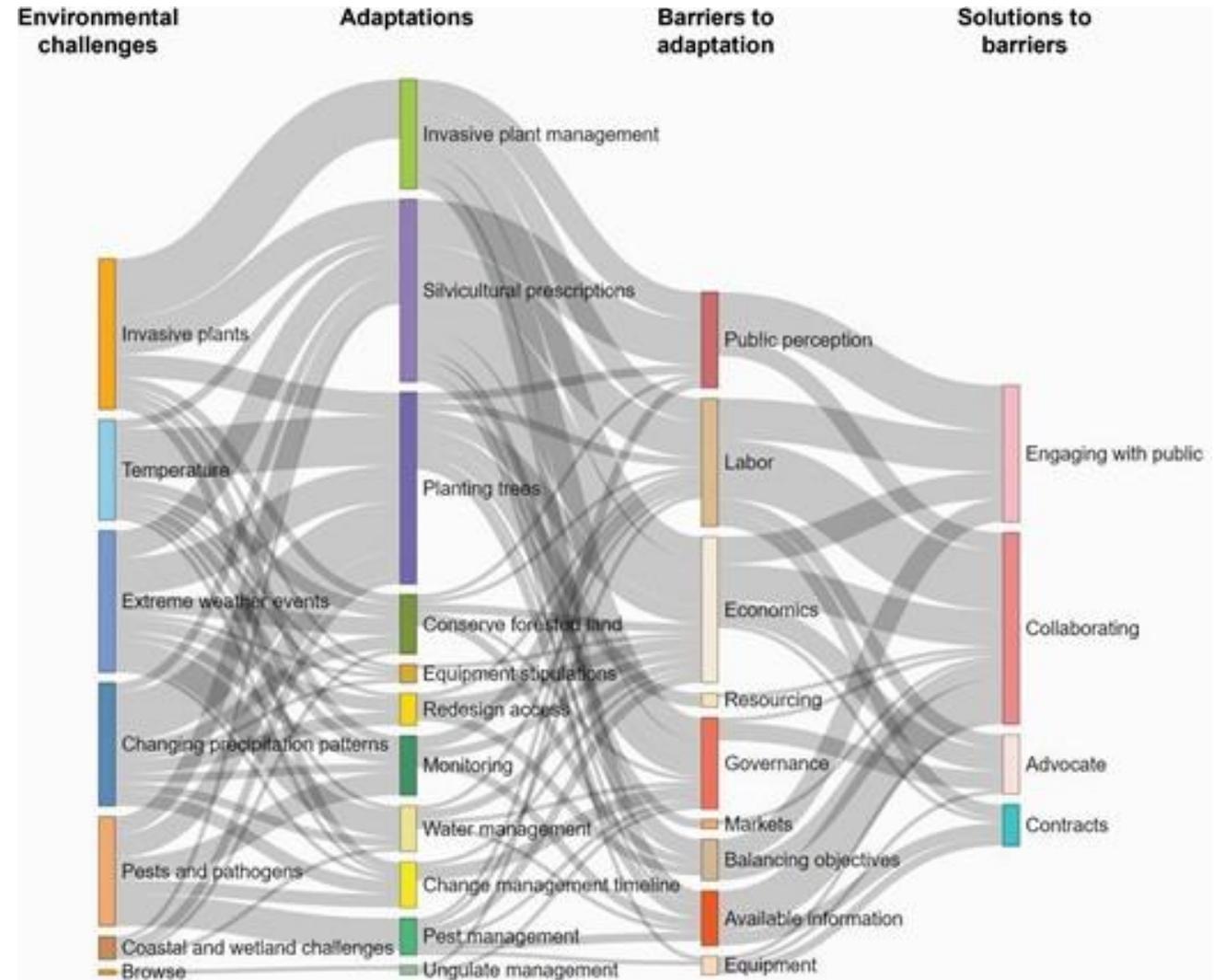
JOURNAL ARTICLE

Climate Adaptive Management in the Northeastern United States: Common Strategies and Motivations of Rural and Urban Foresters

Tessa C McGann ✉, Rachel E Schattman, Anthony W D'Amato, Todd A Ontl

Journal of Forestry, fvac039, <https://doi.org/10.1093/jofore/fvac039>

Published: 10 December 2022 Article history ▼



Conclusion: Reducing barriers

1) Improved policy and financing

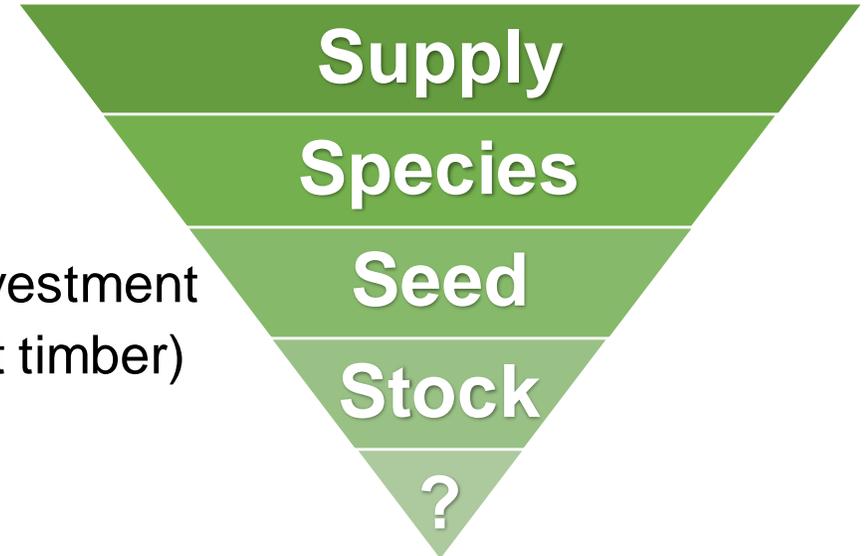
- Policies for movement of species and genotypes
- Programs (CCC) and financial support for speculative investment
- Legislating trying reforestation to widening goals (not just timber)

2) Resources and training

- Information and professional development incentives
- Grants and cost-share programs

3) Research and monitoring

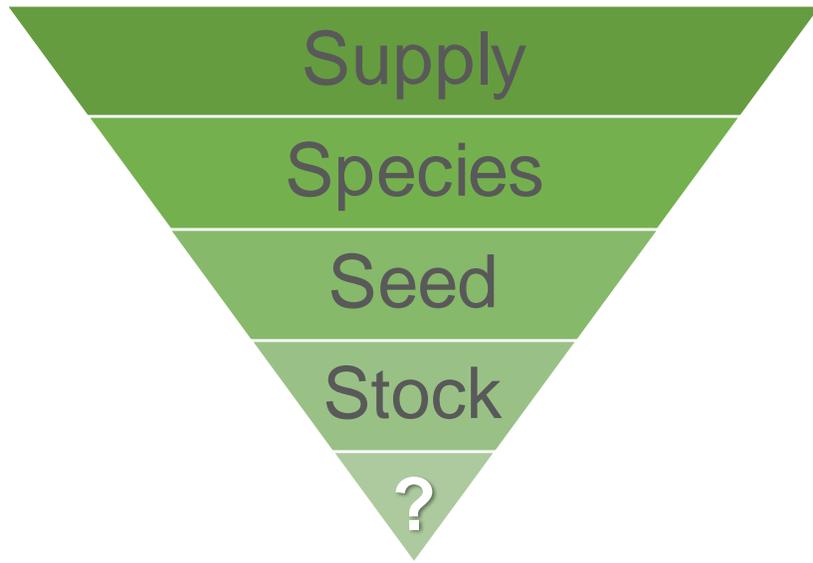
- High quality records of seed origin are readily obtainable for buyers
- National seed labelling standard and database
- Greater emphasis on outplanting monitoring and information sharing



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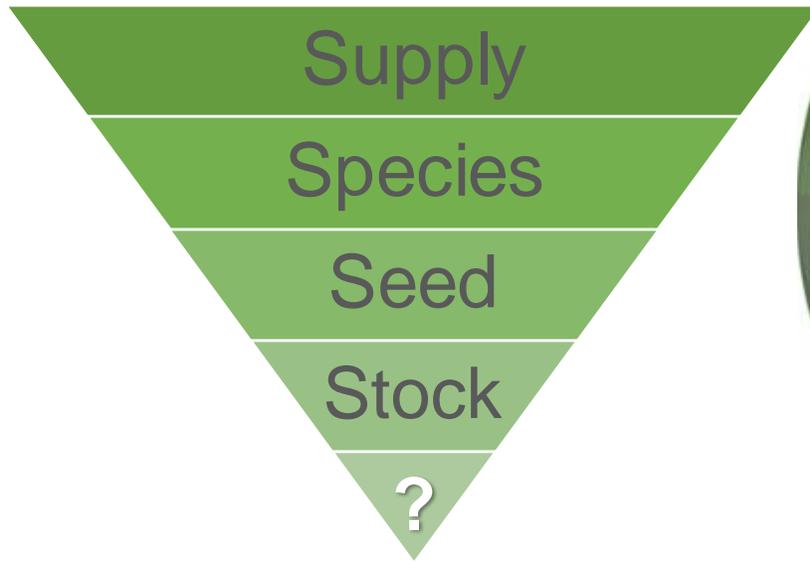


Extra slide ideas

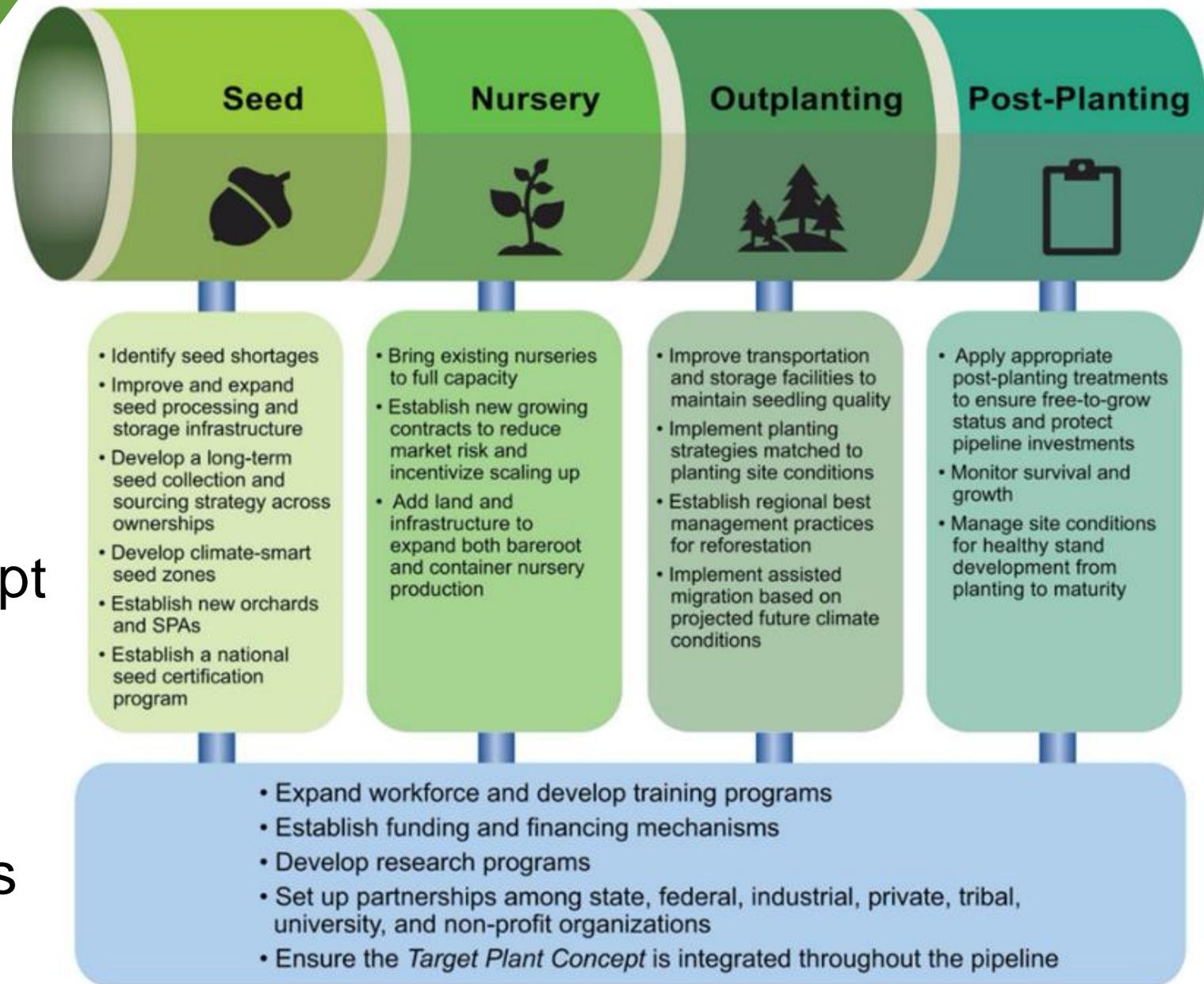


- Artificial regeneration with “*Ecological Forestry*” in mind vs. “*TRIAD*” approaches





- Regeneration Pipeline and Target Plant Concept
- Other operational constraints
- Uncertainty, knowledge gaps, and best practices





















Speculative Investment