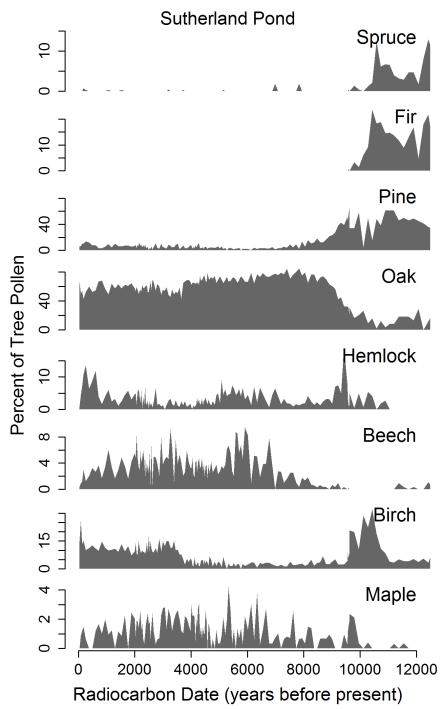


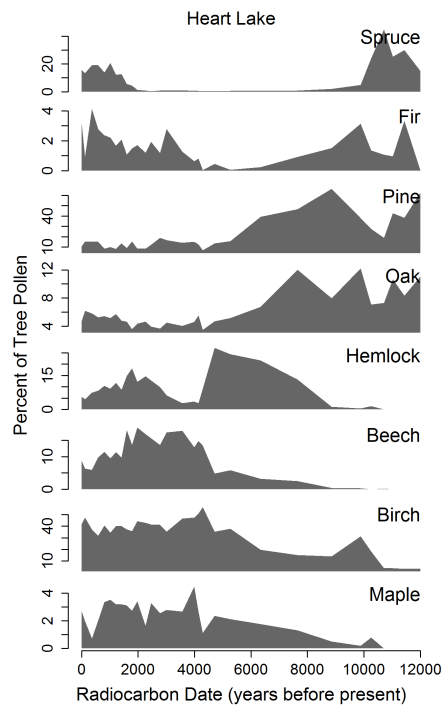
Home port: The ebb and flow of presettlement forests

Maenza-Gmelch (1997)

Hudson Highlands



Adirondack Mountains



Whitehead and Jackson (1990)

Legacies of European agriculture

1700



1800



? ↑ Have the forests truly “recovered”? ↓

1900



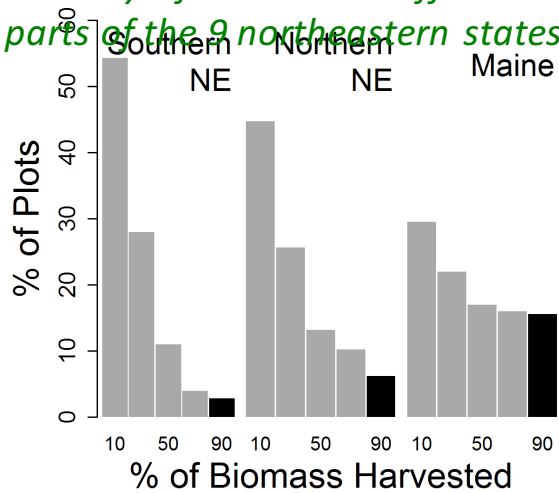
1850



Public perception: clearcutting is still the dominant forestry



Frequency distribution of the intensity of harvests in different parts of the 9 northeastern states



❖ Reality: clearcutting is uncommon except in certain regions and forest types (i.e. spruce/fir forests and increasingly in beech forests).

Unwanted passengers: Invasive plants



Tree of heaven

*Allelopathic, and
incredibly rapid growth*

The canopy is a zero-sum game, but the understory is not...

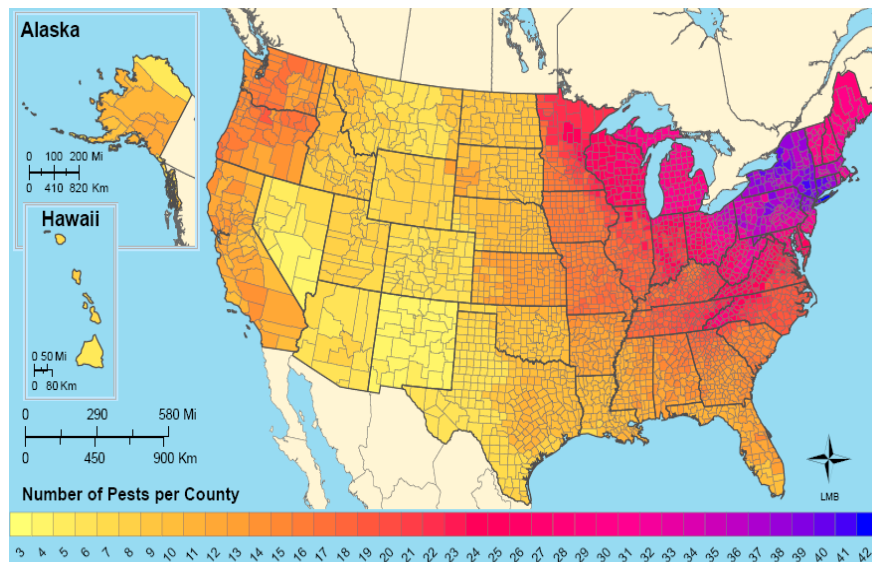
When does invasion result in displacement of natives?

Garlic mustard

Toxic to endomycorrhizae



New York is ground zero for exotic pests and pathogens



*Number of non-native forest pests per county
in the US in 2012. (Source: Liebhold et al. 2013)*

The tree-SMART Trade Initiative (Gary Lovett, Cary Institute)



Invasive Forest Pests in the United States

COMMUNITY IMPACTS AND OPPORTUNITIES FOR TREE-SMART TRADE

PROBLEM

global trade

increased trade =
increased risk from pests

IMPACTS

- Trees become infested causing damage or death
- Changes the character of neighborhoods
- High costs and damages, borne disproportionately by homeowners and municipalities

tree-SMART trade

5 policy actions that will help prevent new forest pests.

Switch to pest-free packaging materials for international shipments to the US.

Minimize new pest outbreaks by expanding early detection and rapid response programs.

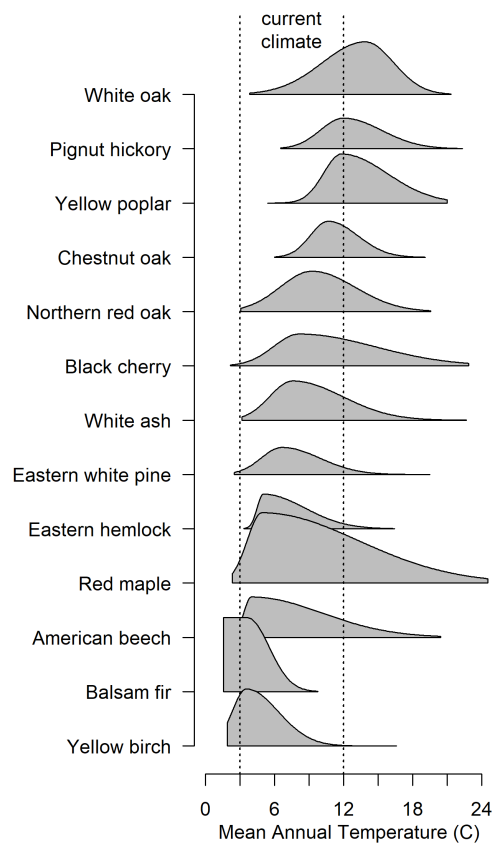
Augment international pest prevention programs with key trade partners.

Restrict the importation of live plants in the same genera as native woody plants in the US.

Tighten enforcement of penalties for non-compliant shipments.

Climate change: looming but not an imminent threat

- ❖ Eastern trees typically occur across a greater than 10 °C range of climates
- ❖ Mortality of adults and even saplings of most species is relatively insensitive to variation in climate
- ❖ Seedlings are much more sensitive
- ❖ BUT, the current occupants represent 1-2 generations that persist for 100-200 years even in the face of significant warming...
- ❖ **With some notable exceptions – particularly the northern conifers like balsam fir**



The fall and rise of the white-tailed deer



White-tailed deer
(*Odocoileus virginianus*)

Deer enclosure in the
Hudson Valley

Presettlement density: ~ 10 / sq. mile
Current density (northern): $\sim 20-40$ / sq. mile
Current density (southern): > 100 / sq. mile





Legacies of fire suppression

- ❖ Is fire suppression responsible for a reduction in the regional dominance of oak species in many parts of the eastern US?
- ❖ Has the reduction in the abundance of oaks over the past 100 years fundamentally altered the flammability of these forests?



Composition of the Cary Institute Woods
(witness trees in 1735 vs. current composition)

