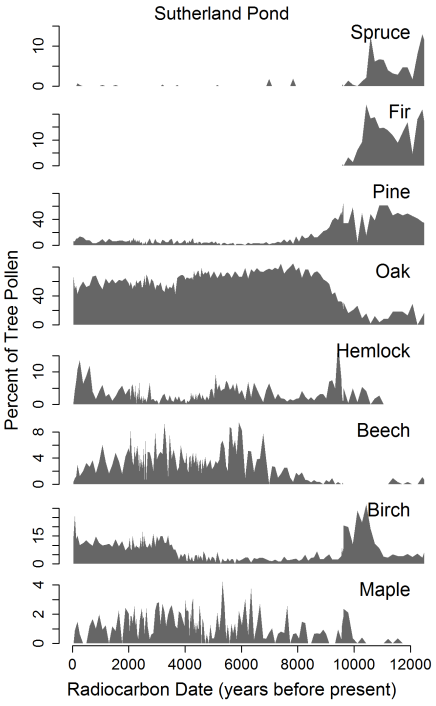
Home port: The ebb and flow of presettlement forests

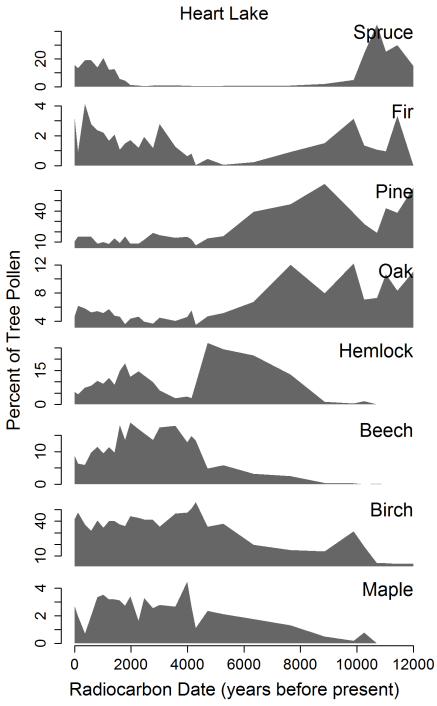
Hudson Highlands

Maenza-Gmelch (1997)



Adirondack Mountains

Whitehead and Jackson (1990)



Legacies of European agriculture

1700

1800

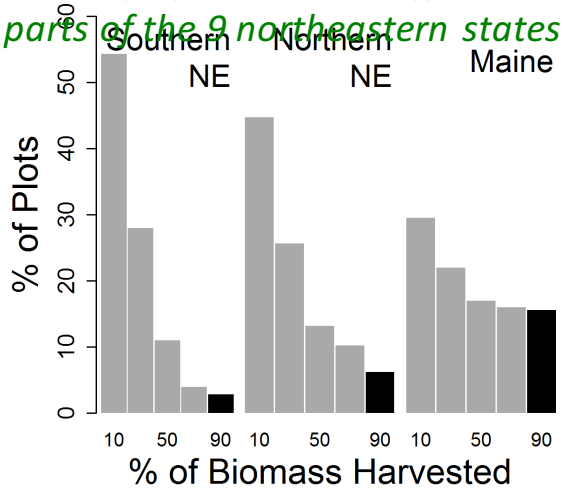
? Have the forests truly “recovered”?

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

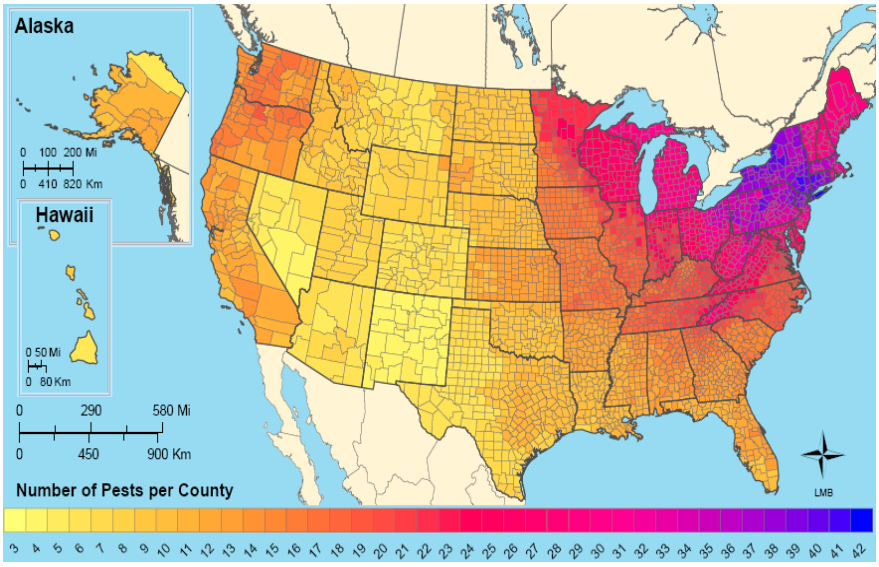
The canopy is a zero-sum game, but the understory is not…

When does invasion result in displacement of natives?

Garlic mustard

Toxic to endomycorrhizae

New York is ground zero for exotic pests and pathogens

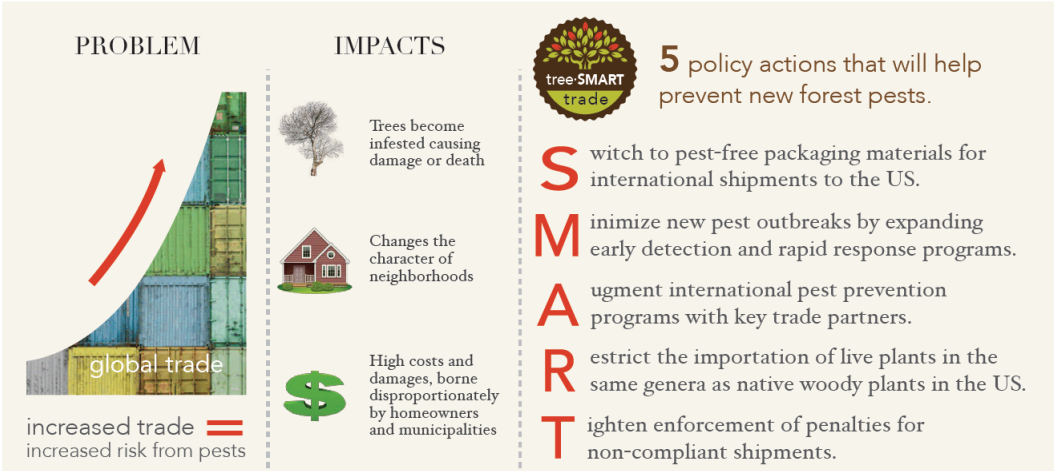


Number of non-native forest pests per county in the US in 2012. (Source: Liebhold et al. 2013)

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

Invasive Forest Pests in the United States

COMMUNITY IMPACTS AND OPPORTUNITIES FOR **TREE-SMART TRADE**

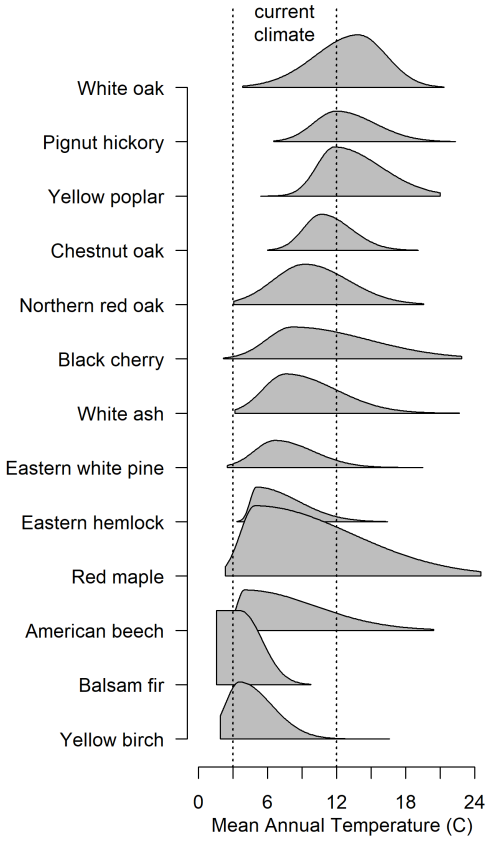


Climate change: looming but not an imminent threat

- 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 virginanus*)

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

Deer exclosure in the Hudson Valley

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)