



# Weir Hill Barrens Habitat and Management

Jeffrey Denoncour (Coastal Ecologist)

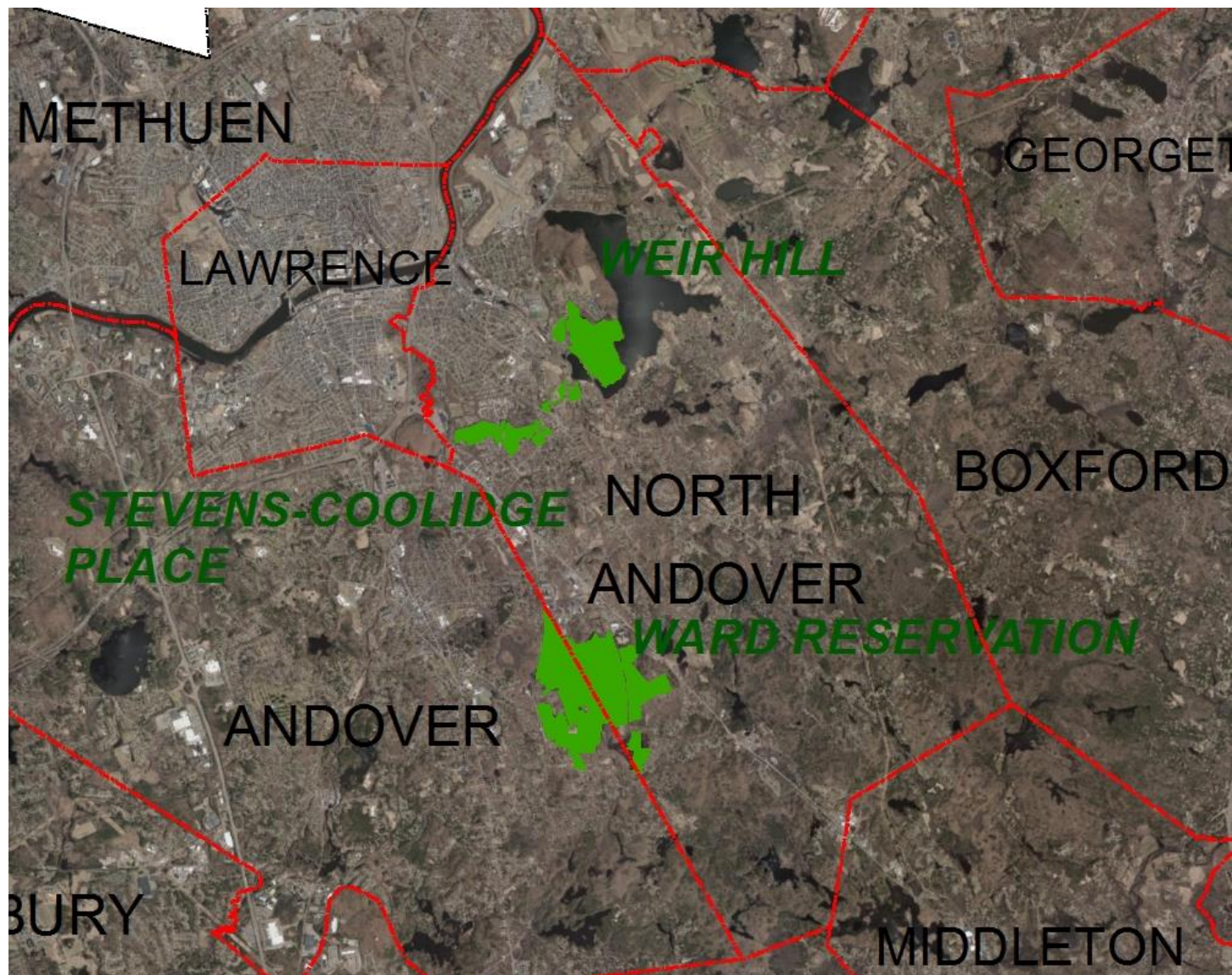
The Trustees of Reservations





# The Trustees

- Nations oldest Non-Profit Conservation Organization
- The Trustees conserve places of exceptional scenic, historic, and ecological value for public use and enjoyment.
- We own over 27,000 acres, including 120 reservations.
- Three reservations in North Andover Area





# Weir Hill

- Weir Hill 194-acre reservation owned by The Trustees
- Ecologically diverse with uncommon plant species for this area.
- 80 acres of fire influenced landscape
- Home to state endangered wildlife (frosted elfin butterfly) and Species of Greatest Conservation Concern (Prairie Warbler).







# Early Successional Habitat

- Characterized by herbaceous plants, grasses, shrubs and young trees.
- Created by disturbances (fires, storms, humanity)
- Biodiverse landscape
- Important for a variety of species dependent upon this habitat type



# Barrens Habitat

- Early successional habitat
- Barrens are characterized by dry well-drained coarse textured sandy, infertile soils derived from glacial outwash and moraine
- Supports unique species adapted to the dry nutrient poor conditions (heath and oak)
- Habitat on decline and supports many rare species





# Habitat Succession

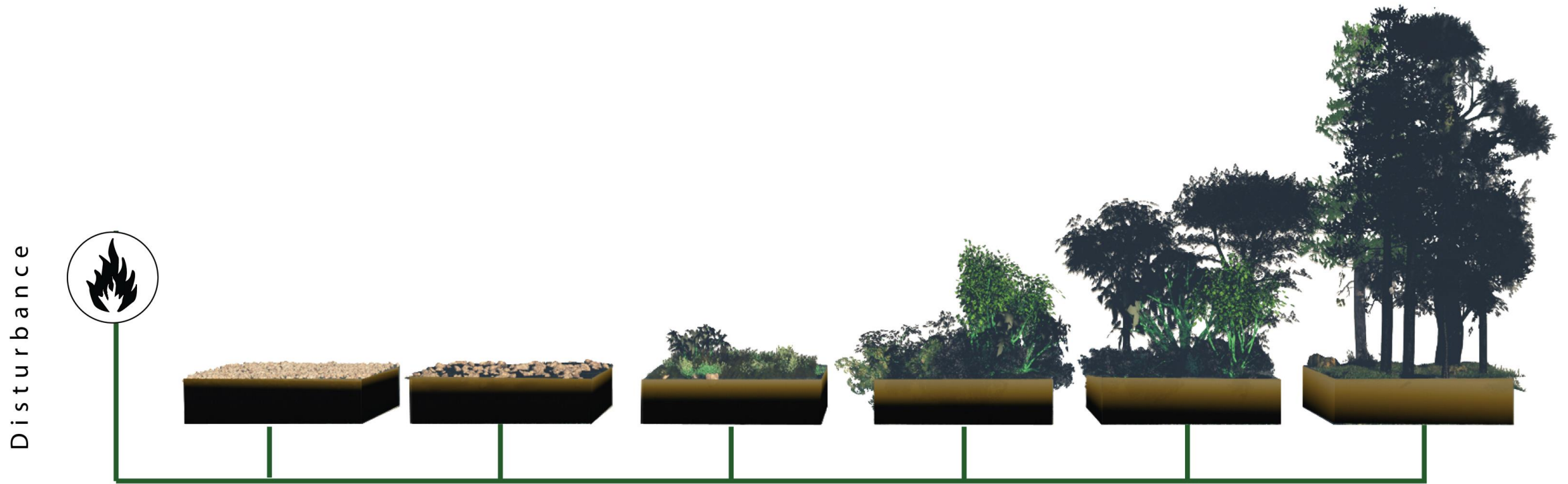


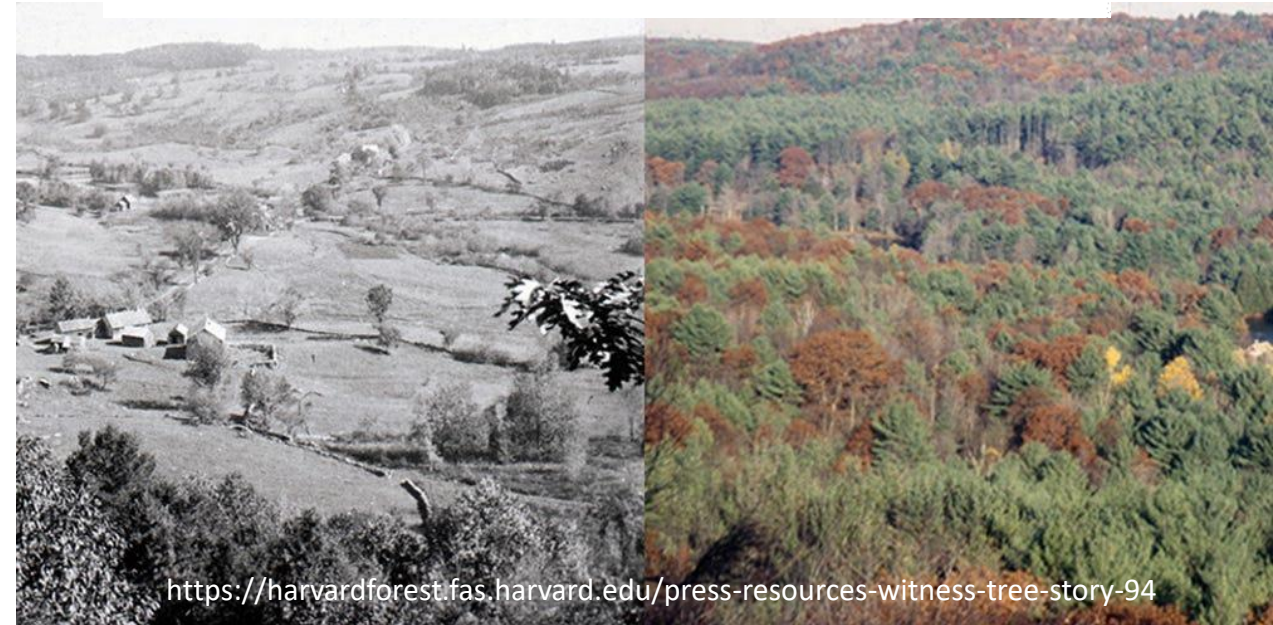
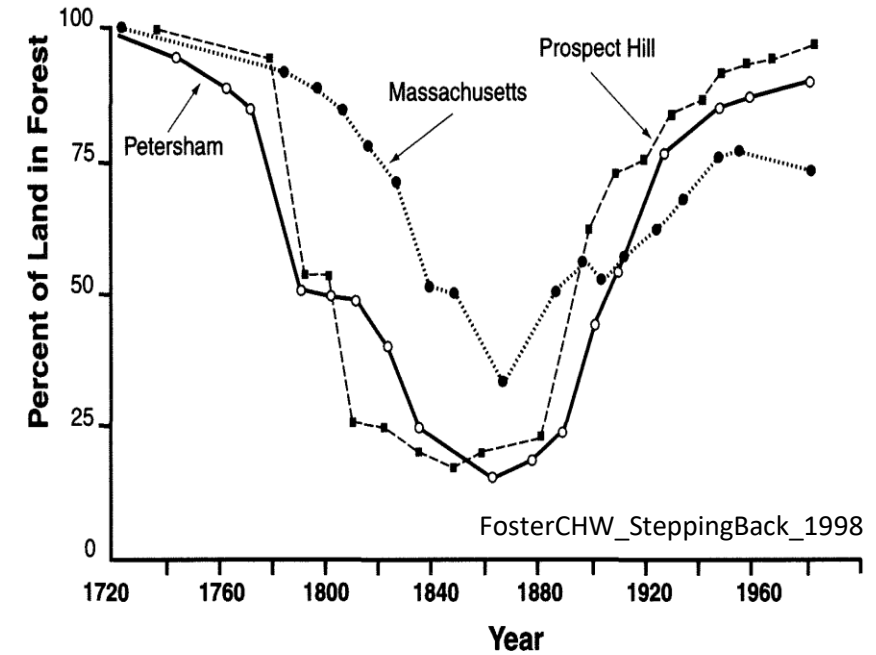
Image credit: modified from [Forest succession](#) by Lucas Martin Frey, [CC BY 3.0](#)



# History of Habitat Succession

- Colonial deforestation for wood and farmland.
- Industrial age led to less need for wood products and less people farming
- Farmland transitioned into early successional habitat and later, second growth forest.
- “stonewalls through forests”

*Stepping Back to Look Forward*





# Weir Hill History

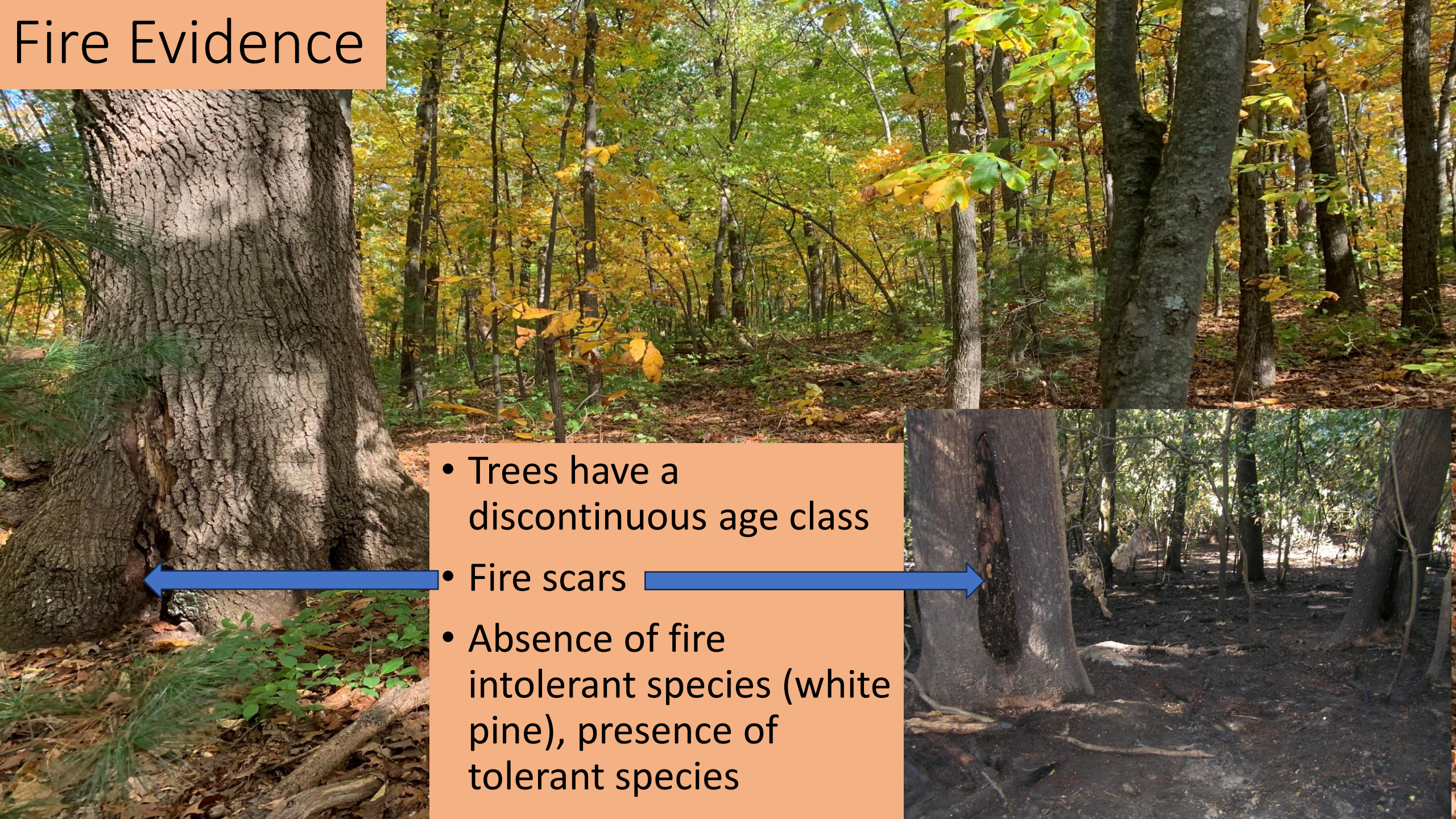
- Long history of human land use dating back to Native Americans.
- History of grazing
- History of fire
  - May 1973 (10 acres) April 1979 (15 acres); July 1979 (16.5 acres in 5 separate areas burned in a fire described as *incendiary*; blazes took two days to put down); May-June 1980 (50 acres in series of 5 fires attributed to children); April 1986 (25 acres); May 1995 (60 acres).



Photo from 1870 from Weir Hill looking at Stevens Street



# Fire Evidence



- Trees have a discontinuous age class
- Fire scars
- Absence of fire intolerant species (white pine), presence of tolerant species



# Restoration History

- Restoration began in 2006 with canopy thinning and heavy mowing.
- Additional canopy thinning in 2015, 2020 and 2022. Total of 60 acres restored.
- Prescribed fire beginning in 2008.
- Substantial funding provided by state and federal wildlife grants.
- Routine mowing and prescribed fire to maintain restored habitat and reduce wildfire severity on a regular basis.





# Habitat We are Trying to Create





# Canopy Thinning

- First step to restore barrens.
- Establishes conditions for understory vegetation to prosper.
- Desired canopy levels 15-25% throughout site.







# Prescribed Fire



- Carefully implemented based on extensive burn plan in partnership with state and local firefighters.
- Kills back susceptible vegetation, limbs and releases canopy and manages under story
- Removes duff layer, and allows for herbaceous plants to germinate.



# Heavy Mowing

- Replicates Disturbance/fire
- Resets the clock
- Prevents tree sapling outcompeting low shrubs and herbaceous plants





# Rare Species



Frosted Elfin

- The barrens provides habitat for 15 Species of Greatest Conservation Need identified by the MA State Wildlife Action Plan.
- Four species present at Weir Hill are listed under the Endangered Species Act, including the frosted elfin a candidate for federal listing.



# Vegetation



Plant Diversity

Little Bluestem

Birds-foot Violet

Scrub Oak

Wild Indigo

Bush Clover

Lowbush Blueberry



# Birds of Conservation Need

Eastern Towhee



© Ray Hennessey

Gray Catbird



© Evan Lipton

Prairie Warbler



©Luke Seitz

Eastern Bluebird



© Keith Kennedy

American Woodcock



© Louis Brodeur





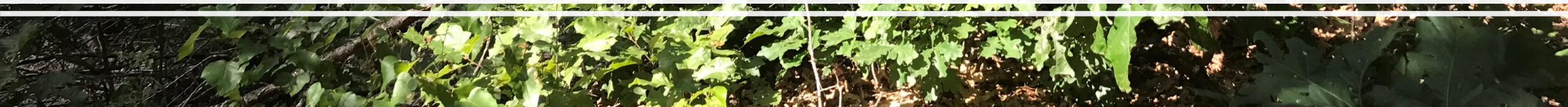
2006 Before Restoration







2019 Conditions After







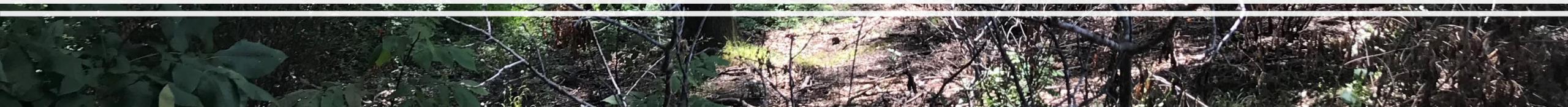
2015 Before Restoration







2019 After Restoration





# Restoration Outcome

- Improved habitat for rare and of concern species.
- Increased biodiversity.
- Reduction in wildfire severity.
- Annual management required to maintain and improve habitat.

