



MASSWILDLIFE

# Open Forest Ecosystems of Southern New England

## *Characteristics, Importance to Biodiversity & Restoration*

Tom Wansleben-Habitat Biologist (MA Forester #462),

*"MassWildlife restores and manages critical habitats to help conserve the diversity of wildlife and plant communities in the Commonwealth for generations to come."*

# *Woodland & Savanna Natural Communities*

## *Fire Influenced*

### *Inland*



Montague Plains WMA

# Woodland

30-70% tree cover

## Overstory

- Large Spreading Crown Trees
- Oaks (Red, White, Black, Scarlet Chestnut),
- Pitch Pine
- Hickory
- Chestnut-*Historically*

Little to No Midstory

Diverse Understory & Groundcover of Shrubs, Grasses & Forbs



# Savanna

10-30% tree cover

Sporadic Trees

- Oaks, Pitch Pine

Little to No Midstory

Diverse Understory

- Shrubs, Grasses & Forbs

Often transition into heathland  
barrens and NWS grasslands





*Kalmia angustifolia*  
Sheep Laurel



*Schizachyrium scoparium*  
Little Bluestem



*Vaccinium spp*  
Blueberry



*Liatris novae-angliae*  
New England Blazing Star



© AZ IK 2005-2023 ; Salicicola

*Ceanothus americanus*  
New Jersey Tea

# Site Characteristics

## Glaciofluvial deposits

- Sand and Gravel
- Kame Terraces, Eskers
- Associated with Riparian Systems
- Nutrient poor & Very Well Drained

Thin soil ridges & South facing slopes



# A Mosaic Across a Fire-influenced Landscape



Spruce-Tamarack Bog



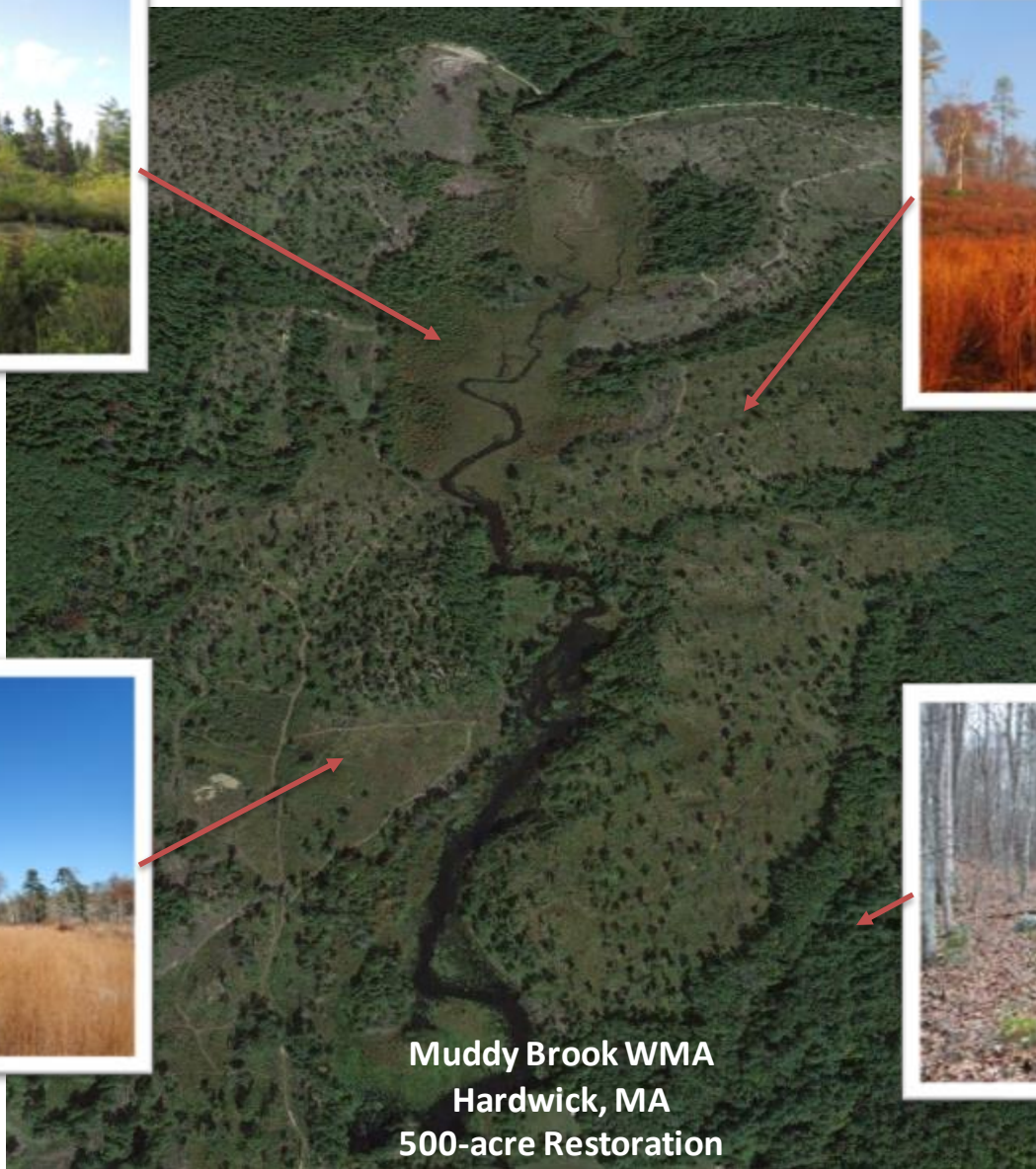
Pitch Pine/Oak Savanna



NWS Grassland & Oak Woodland



Sugar Maple-Oak-Hickory Forest

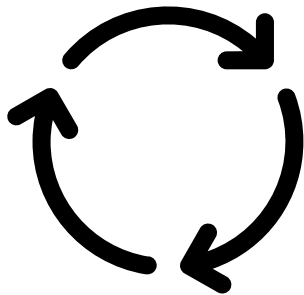


Muddy Brook WMA  
Hardwick, MA  
500-acre Restoration

## Disturbance Dynamic

### Anthropogenic Fire

- Low intensity/High Frequency
- Not Successional



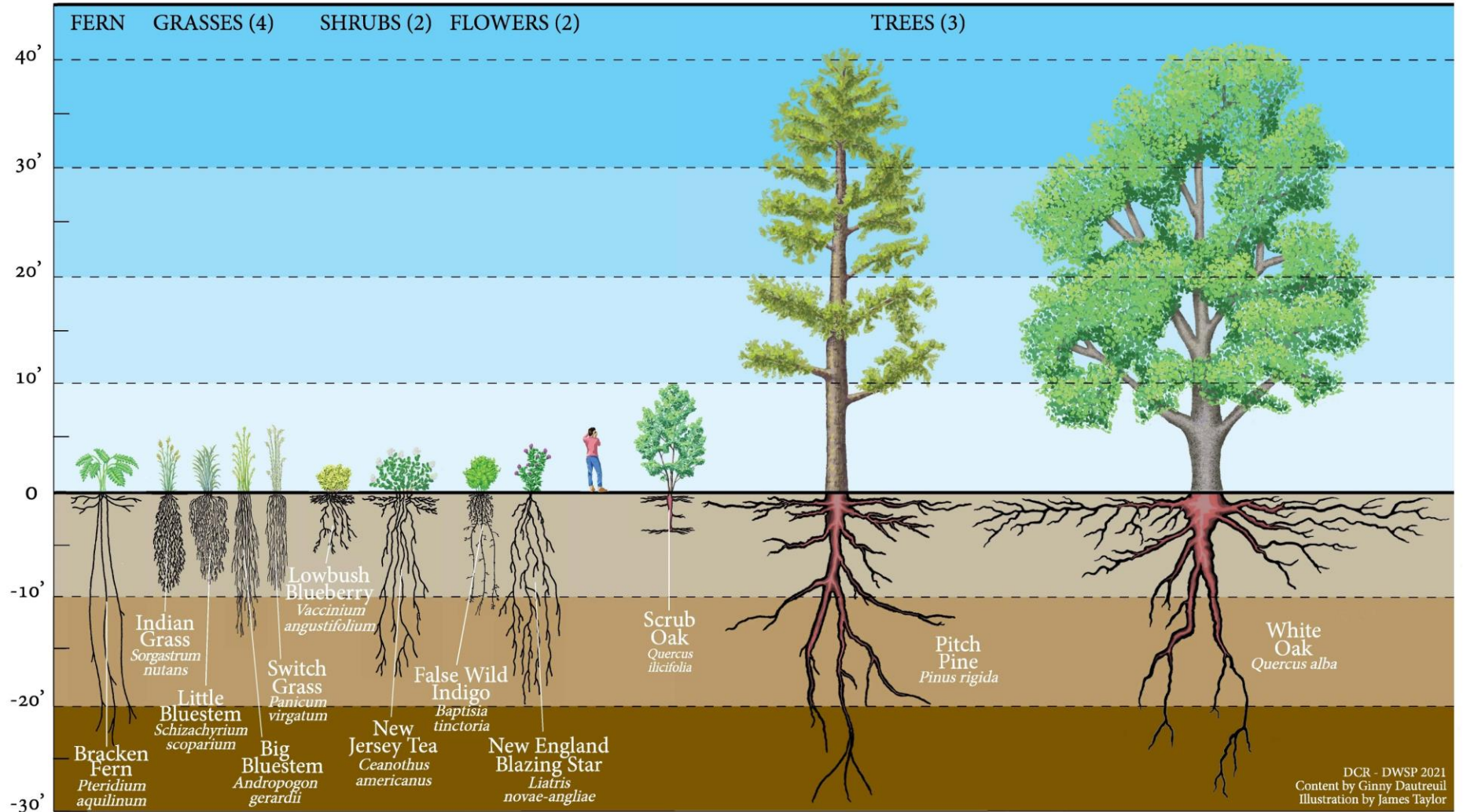
### Feedback Loop

- Promotes Sunlight
- Prevents Midstory





# Root Profiles of Northeastern Fire-adapted Plants



DCR - DWSP 2021  
 Content by Ginny Dautreuil  
 Illustration by James Taylor

***“On one subject, all are in accord, and that is the observation that the original forest was, in most places, extremely open and parklike, due to the universal factor of fire”***

*Bromley 1935 –The Original Forest Types of Southern New England. Ecological Monographs*

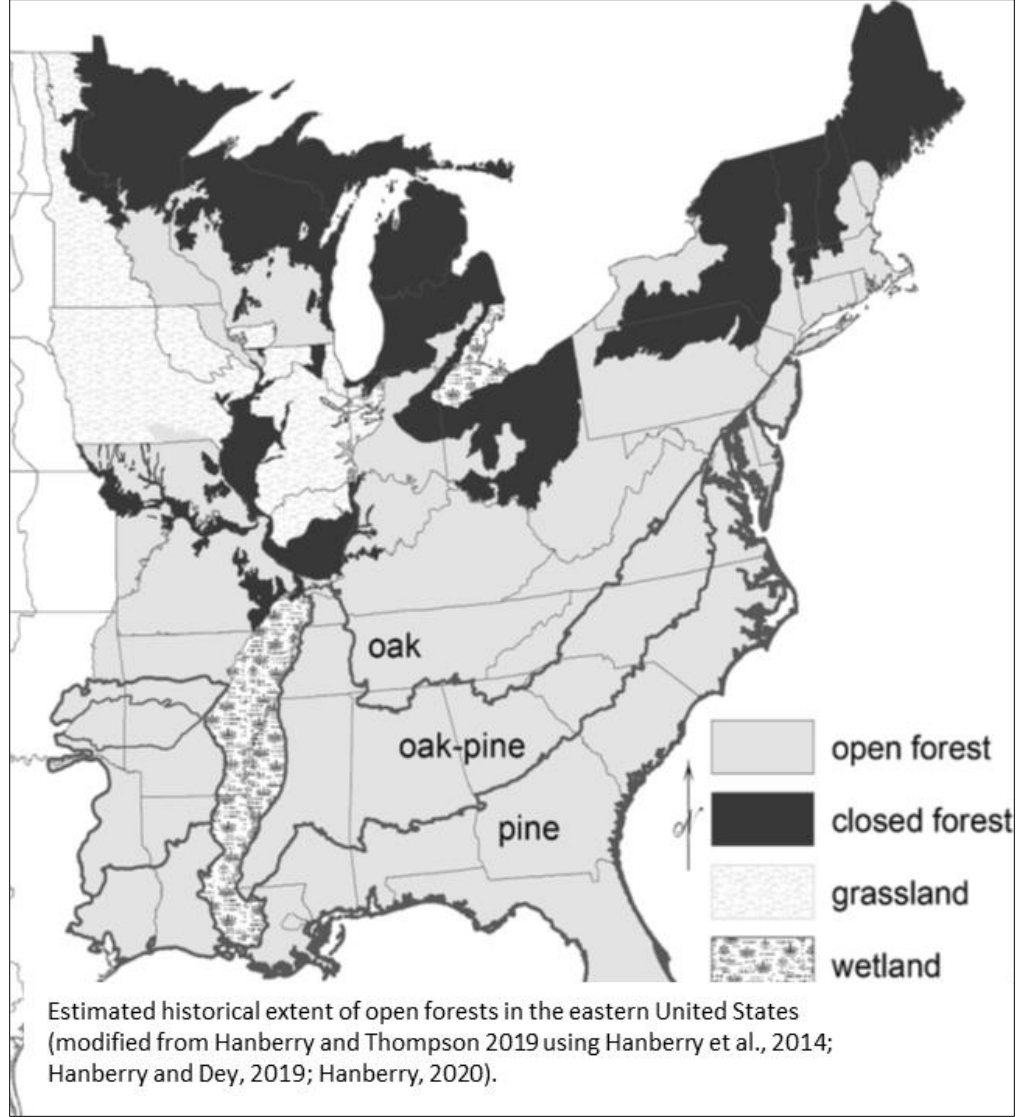
## Historically (& Currently) Indigenous Fire Stewardship Practices

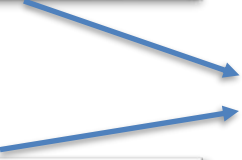
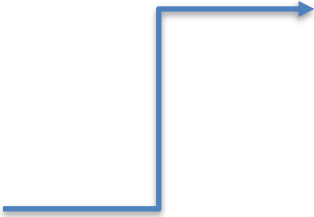


Diana Almendariz, Cultural Practitioner of Maidu-Wintun, Hupa-Yurok Descendancy\_ (c) Alysha Beck, UC Davis.jpg

*“A hill near Boston from which one could see thousands of acres with not a Tree , it was barren”*

***Cronin “Changes in the Land” 2003***





# Importance to Biodiversity

Eastern Whip-poor-will  
(Special Concern)



Sweat Bee (Special Concern)



Owl-eyed Bird Dropping Moth  
(Globally Vulnerable-Considered  
Extirpated)



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## Importance to Biodiversity

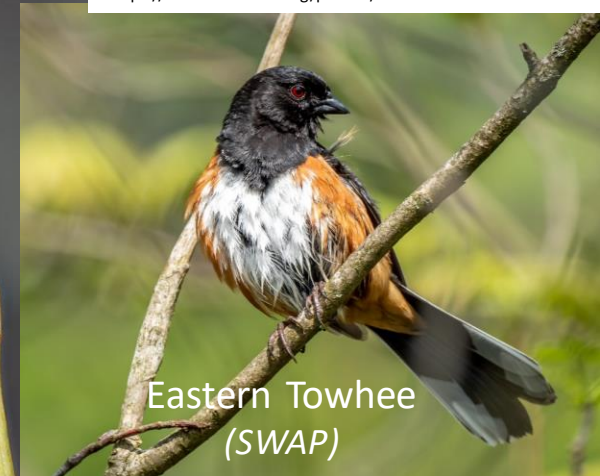
- Whip-poor-wills return after 30-year absence
- Bee species increase:
  - 36 to 103 species
- 23 fire influence plants appear
  - (2-Endangered, 2-Threatened, 3-Watch List)
- Several state listed moths
- Large increase in early successional birds
  - prairie warbler, woodcock

Houghtons Flatsedge  
(Endangered)



© 2016 MinnesotaWildflowers.info

Eastern Towhee  
(SWAP)



***“species richness is declining, and will decline further, as numerous fire-adapted plants are replaced by a limited set of shade-tolerant species”***

*The Demise of Fire and “Mesophication” of Forests in the Eastern US (Nowacki & Abrams, BioScience 58/2)*





# Open Field of Study

- Understory Response to Restoration & Fire.
  - Especially for regionally specific types
  - Different mechanical treatments
  - Seasonality of Fire
- Wildlife Response to Restoration and Fire
- Oak regeneration Dynamics and Fire
- How Fire and Restoration effect Carbon and Water/Hydrology
- Long Term Ecological Data
- Human Dimensions



***Restoration is the Reciprocal Relationship Between Humans and the Environment that is Mutually Beneficial***

