

New Hampshire's Forest Types & Ecology



Steven Roberge
Cheshire County Extension Forester
UNH Cooperative Extension



Overview

- Grouping of Forest Types
- Factors Influencing Forest Types
 - Climate
 - Site
 - Competition/Growth Strategies
 - Shade Tolerance & Response to Disturbance
 - Disturbances
- Types
 - White Pine
 - Northern Hardwoods
 - Spruce/Fir
 - Red Oak
 - Hemlock
 - Aspen/Birch



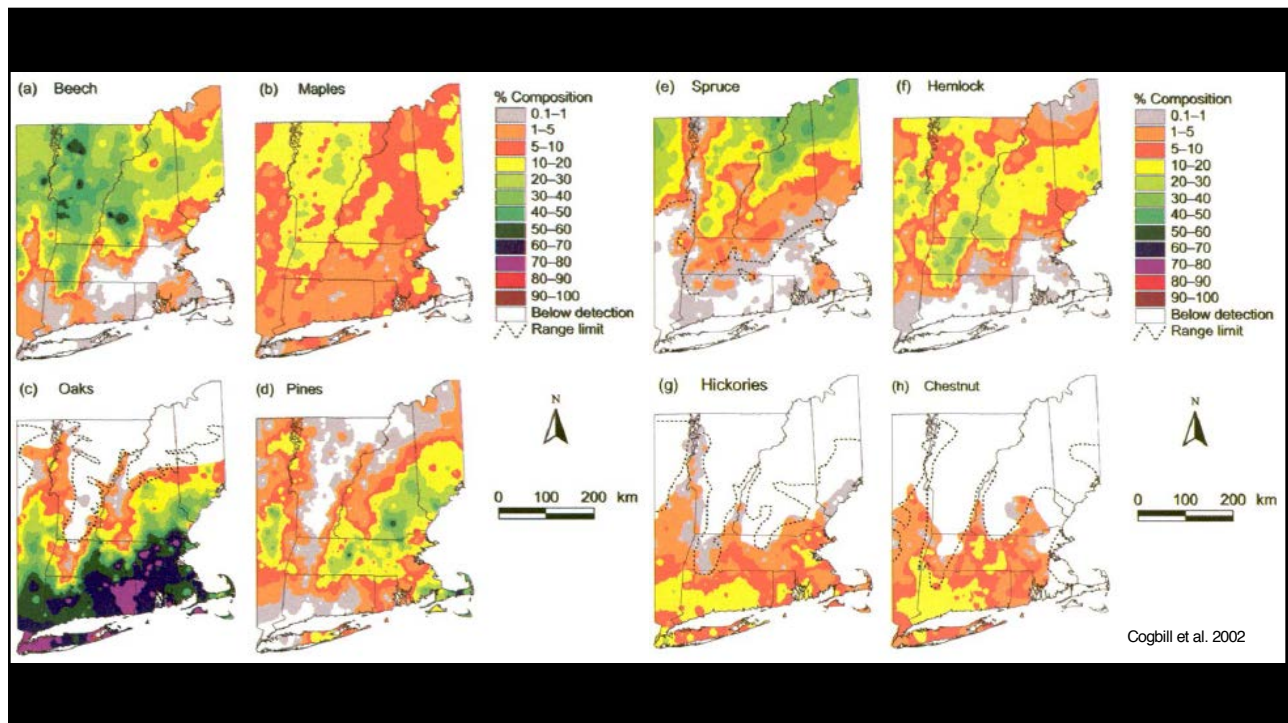
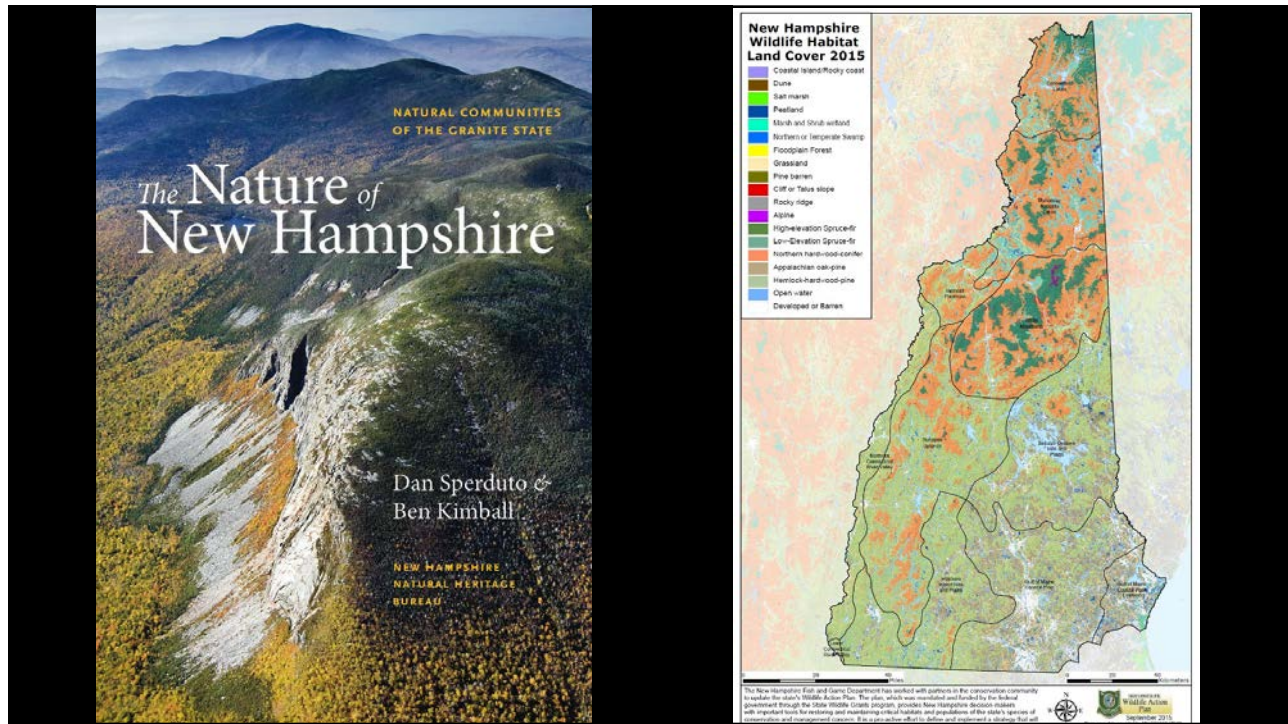
Why so much Forest Ecology and Silviculture and Foresters?

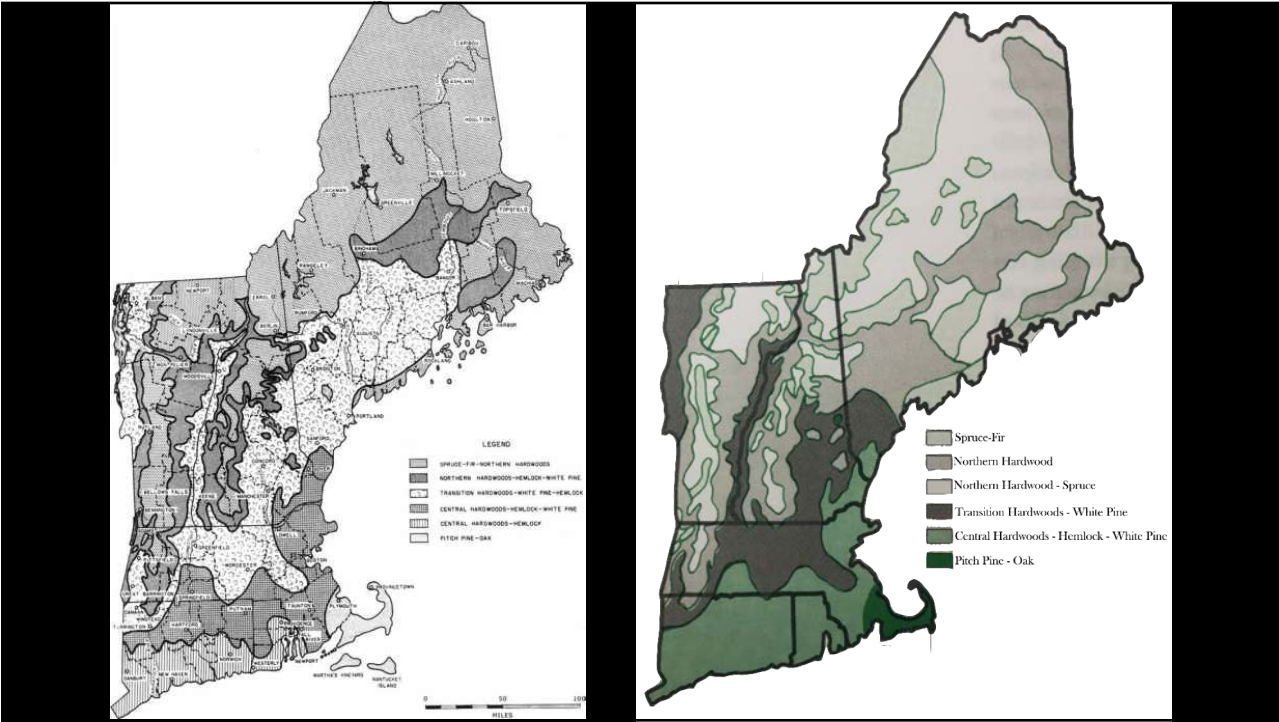
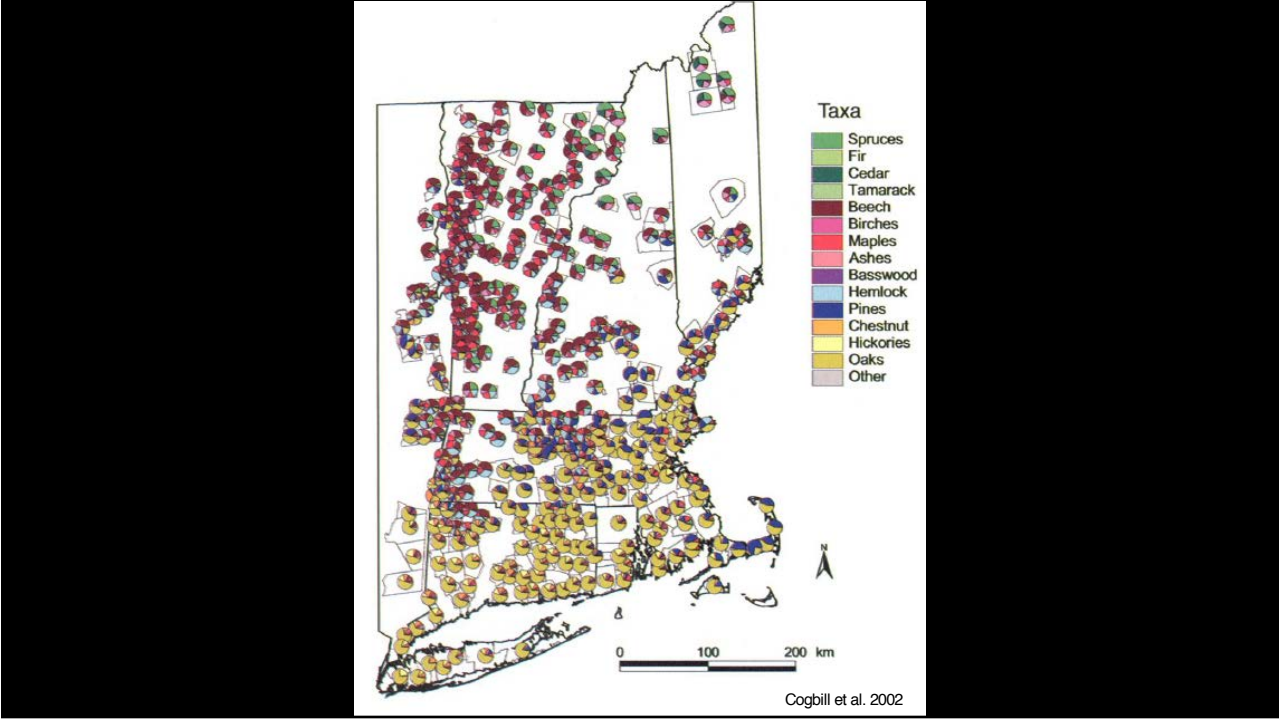
A lot of NH's critters call some form of the forest "home."



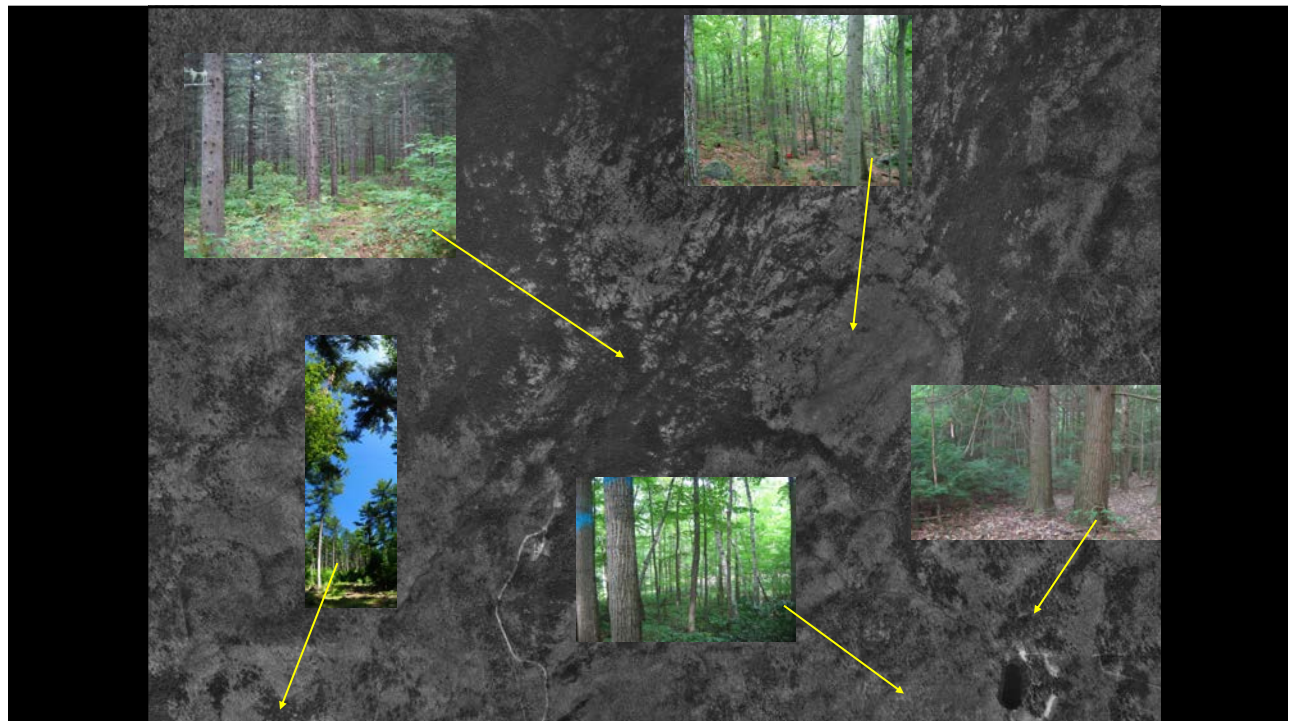
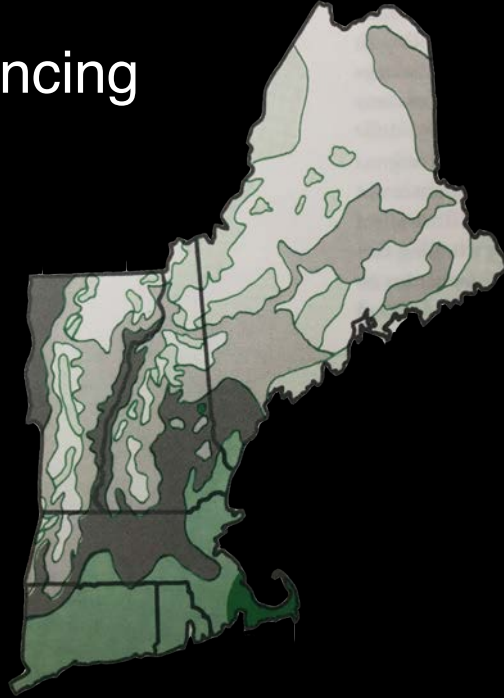
Grouping of Forest Types

- Natural Communities
- NH's Wildlife Action Plan
- Presettlement Survey Records
- Society of American Foresters Categories
- Kuchler, Braun in DeGraaf et al. 2006





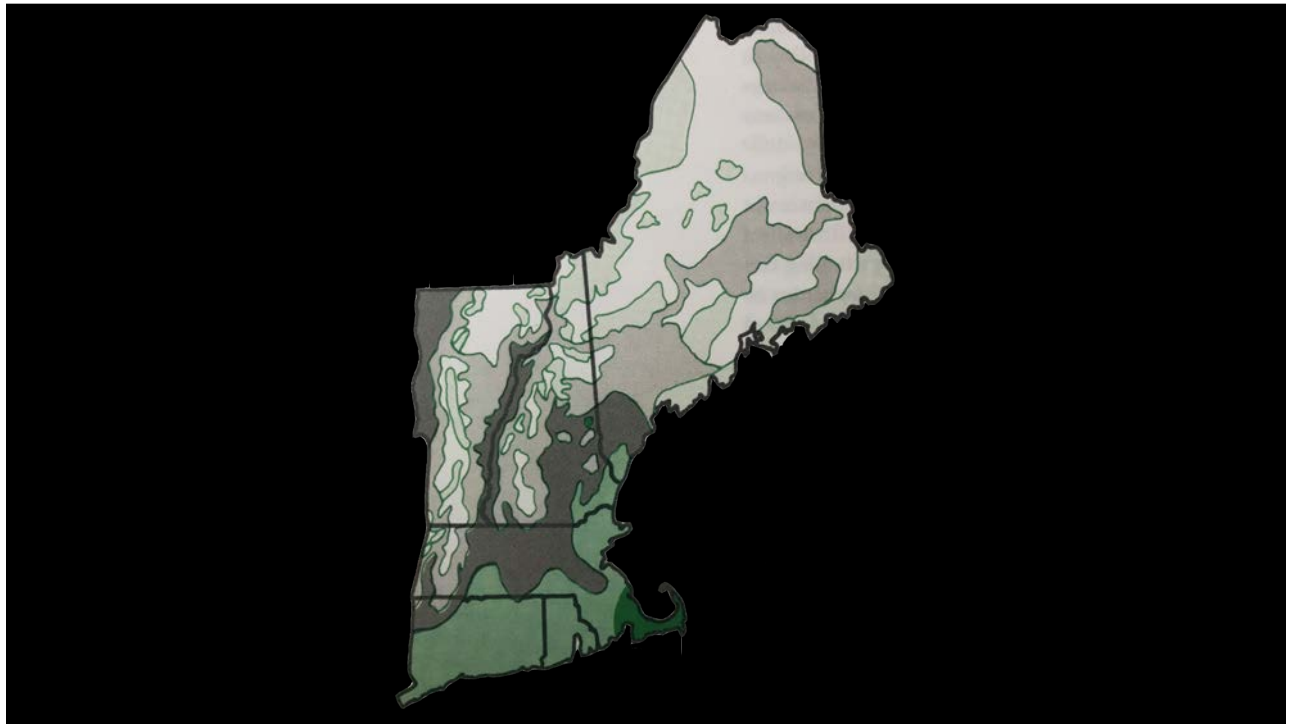
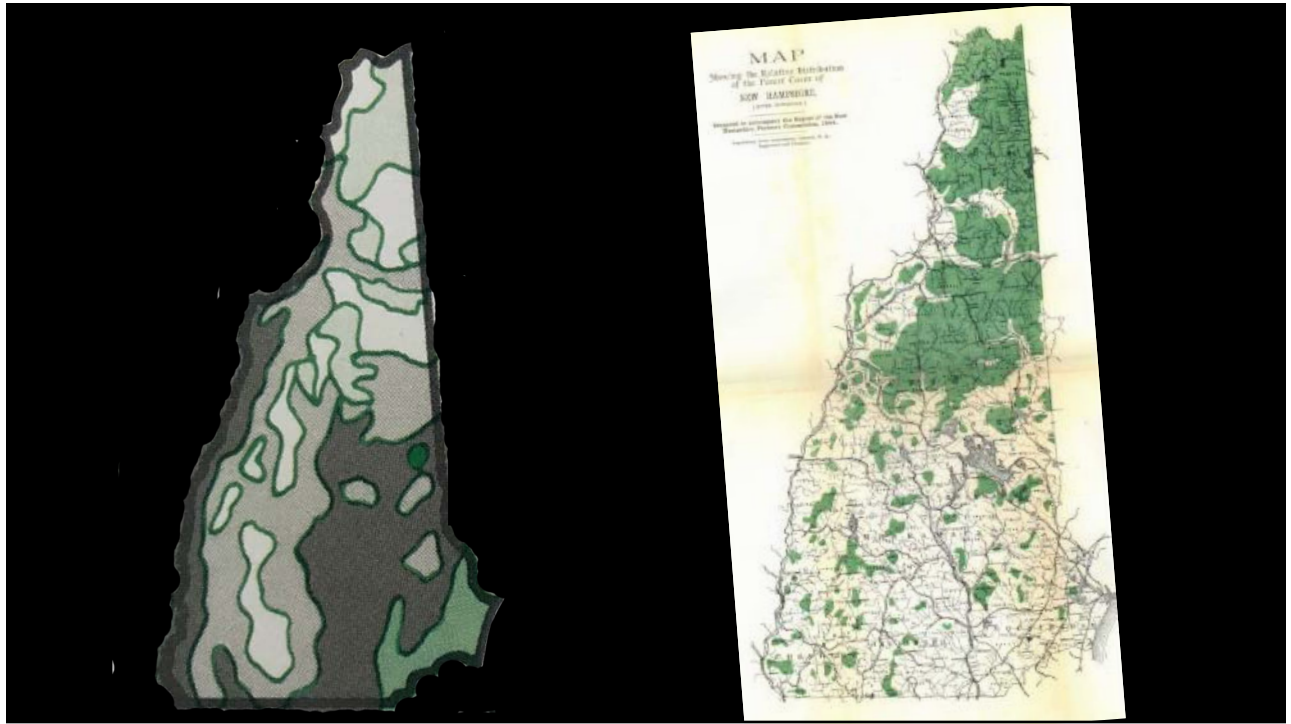
Factors Influencing Forest Types

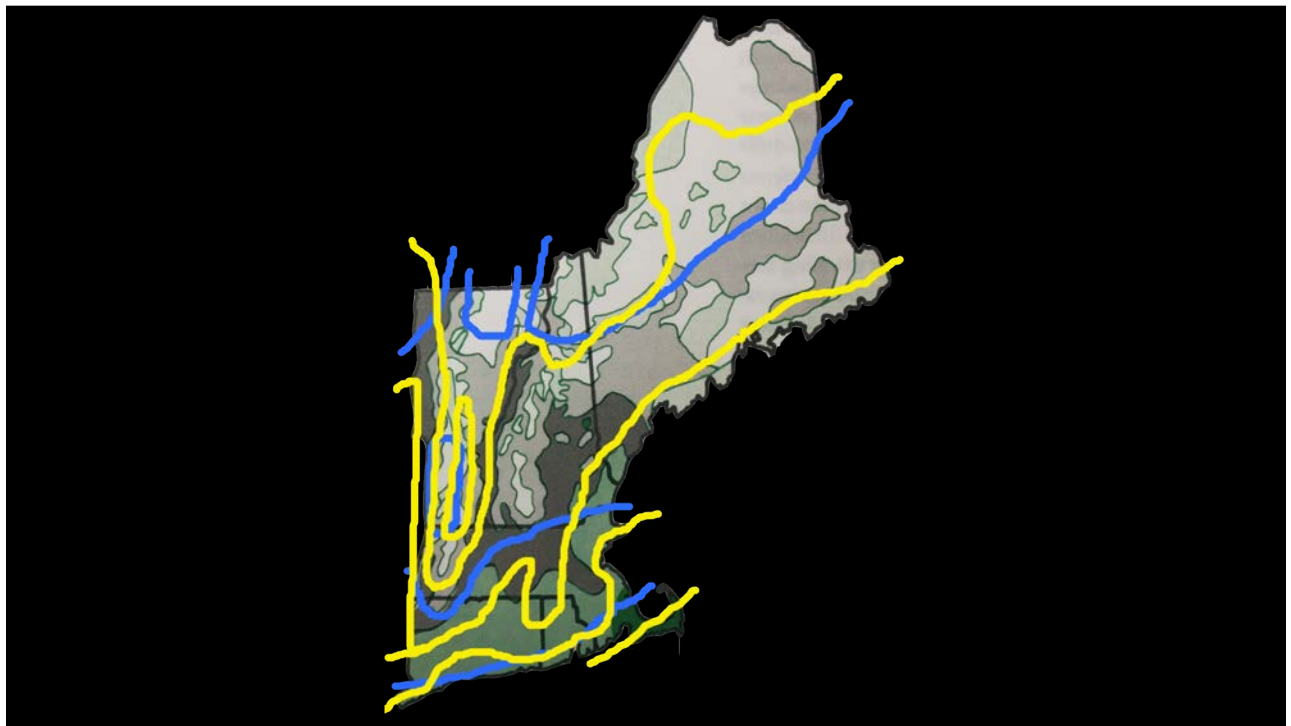


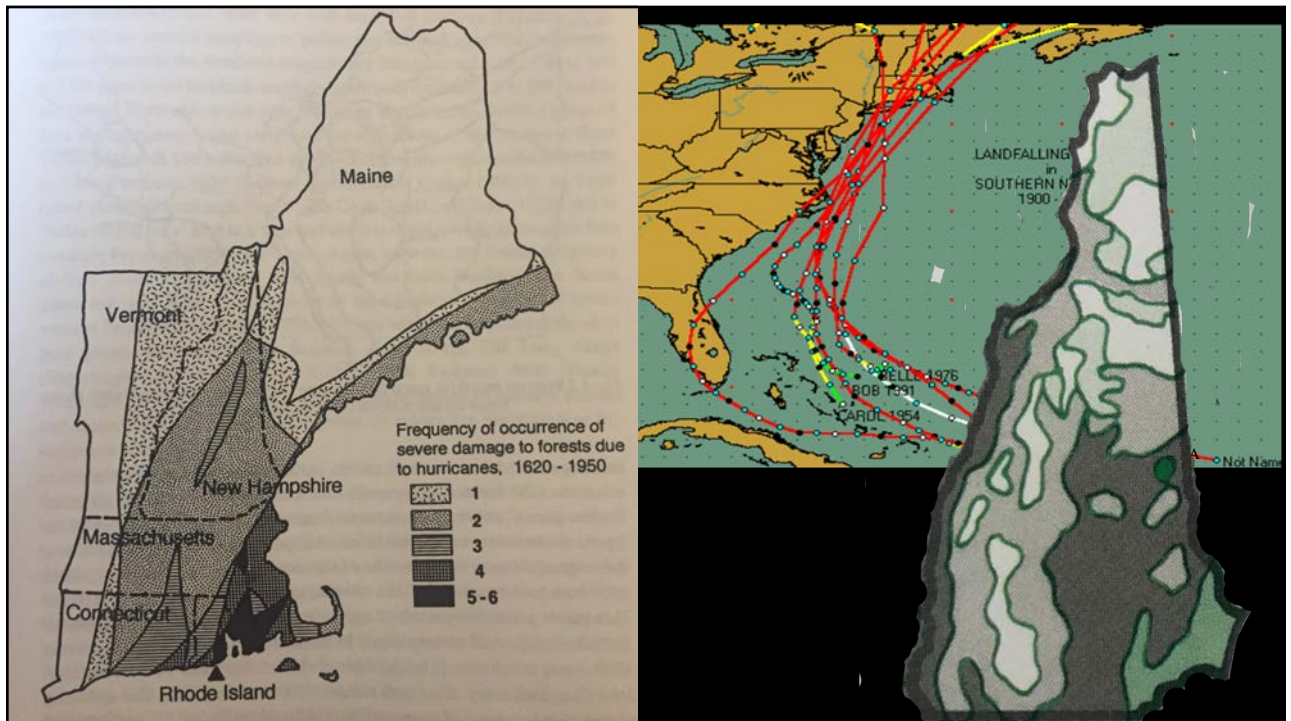
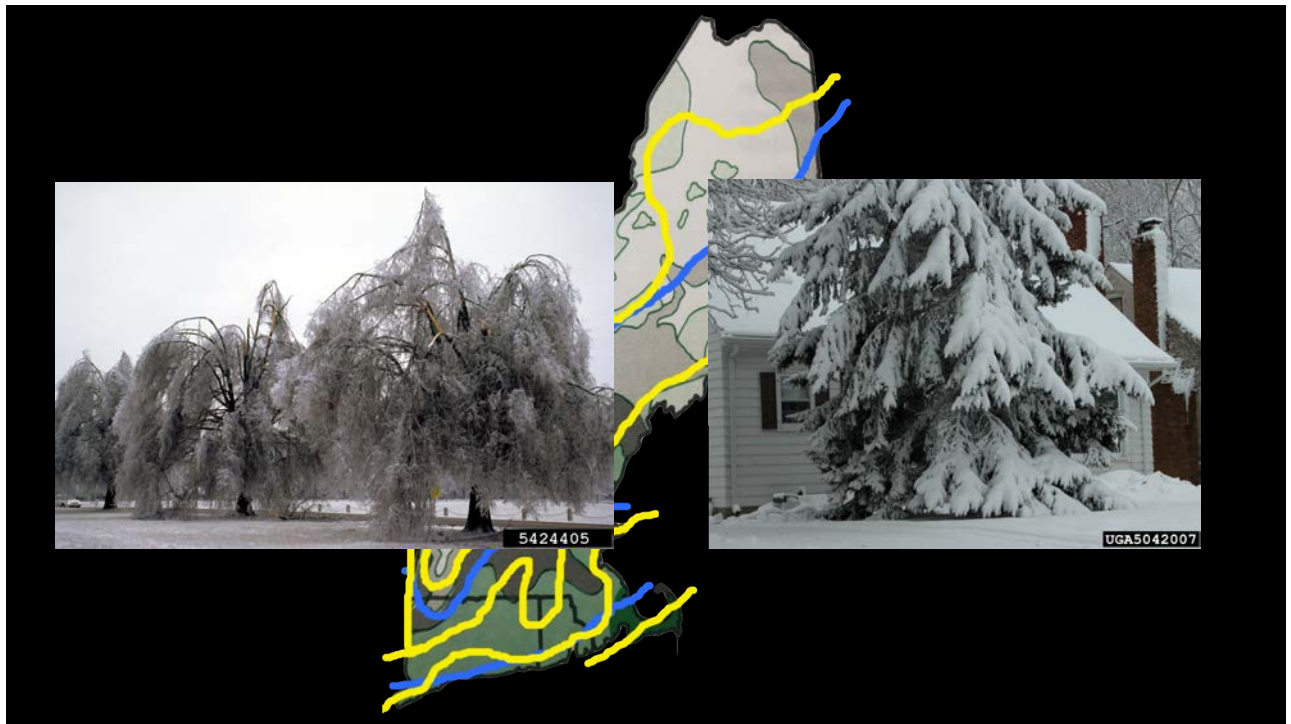
Why so much variation in our forests?

Cogbill



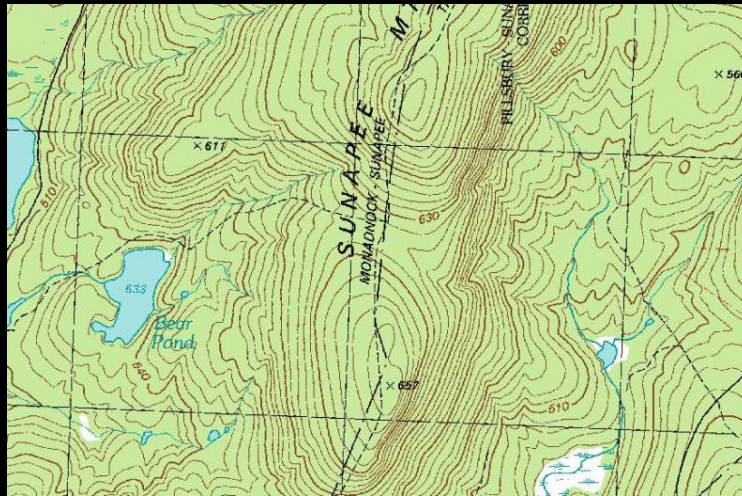








Growing Site



Elevation and Topography Influence Species Composition

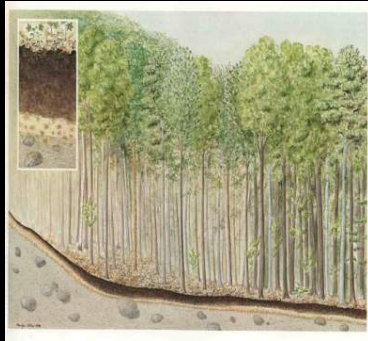
Growing Site



Spruce and Fir at High Elevations and Hill Tops

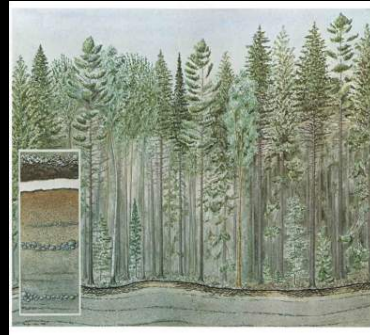
Growing Site

Enriched Soils

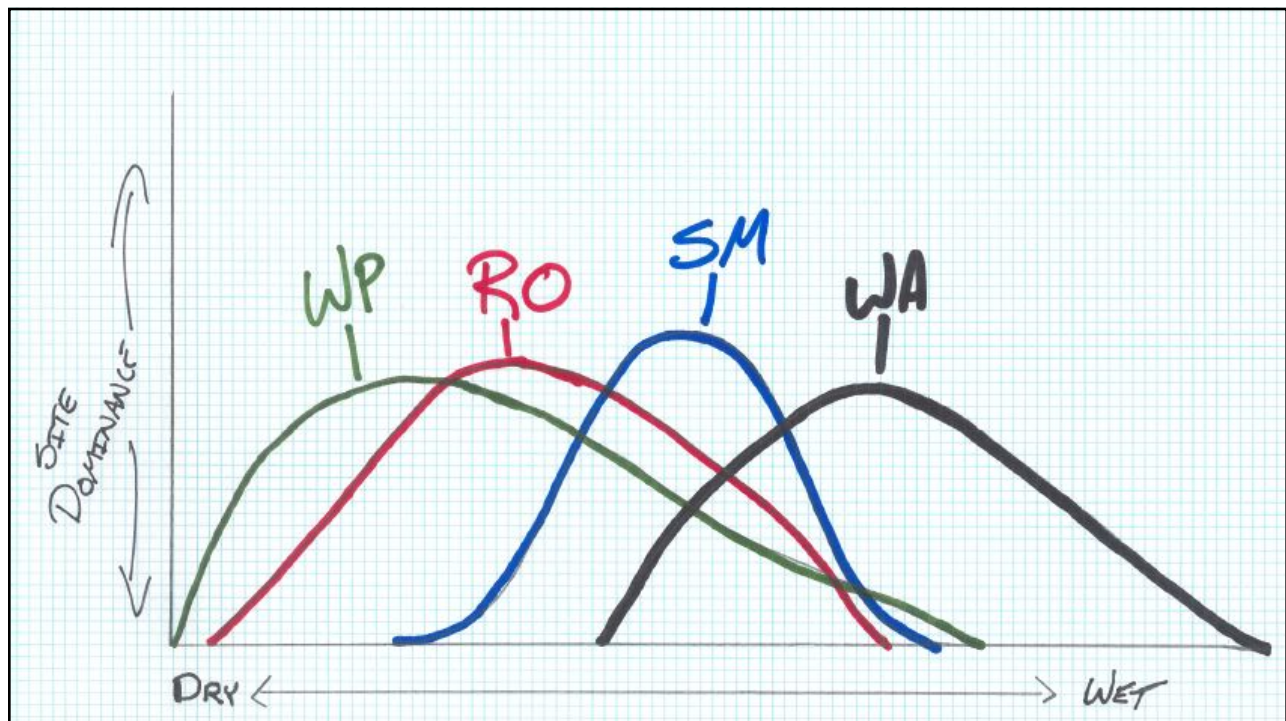


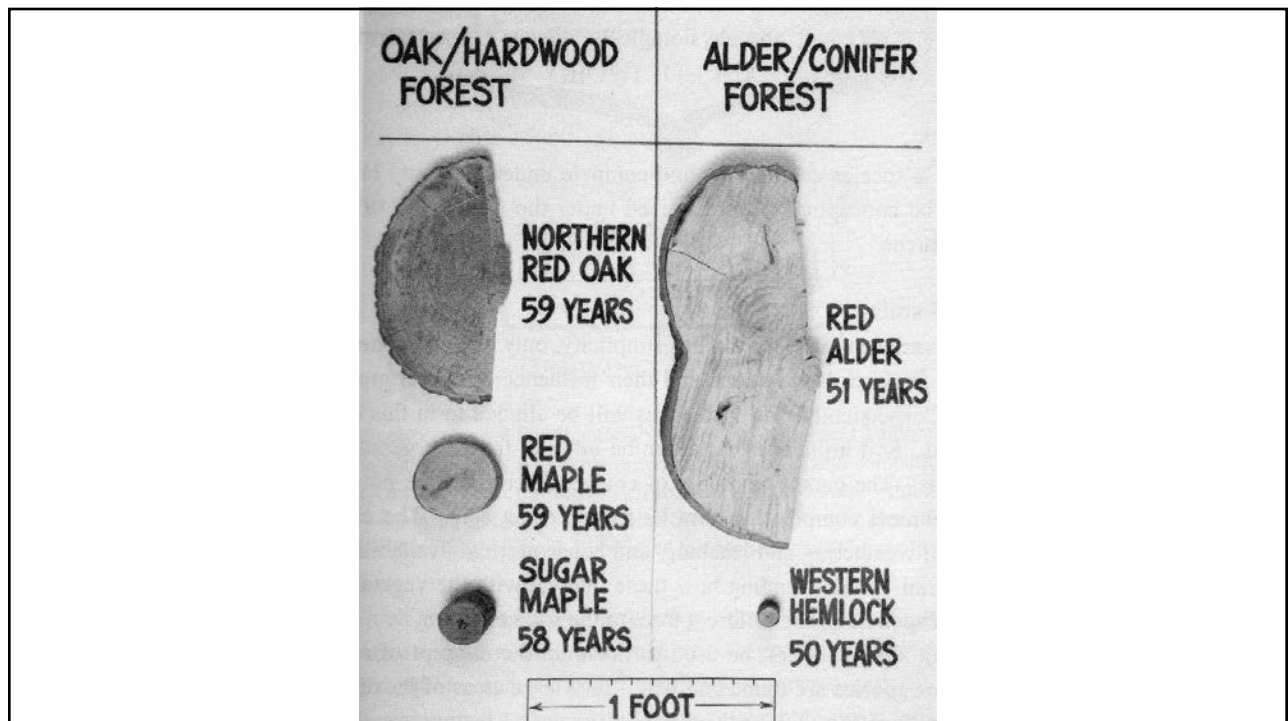
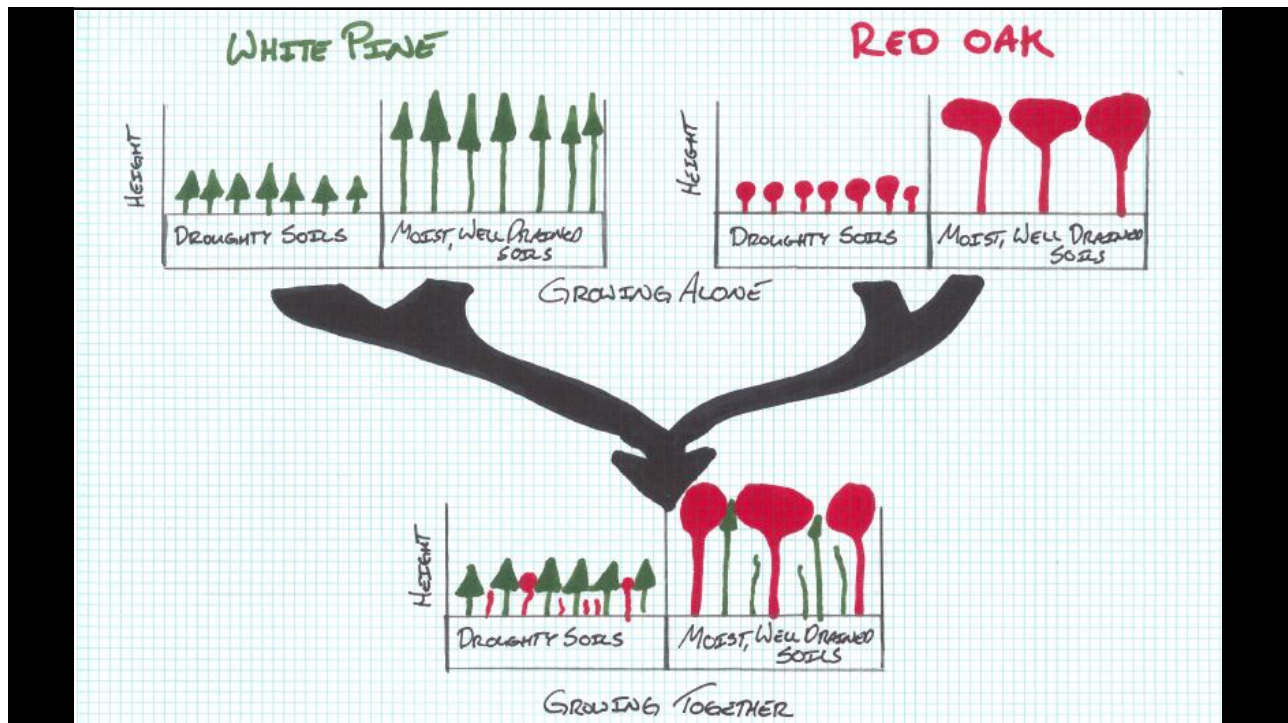
- Lots of organic matter and fine particles.
- Very productive for hardwoods: Sugar Maple, White Ash

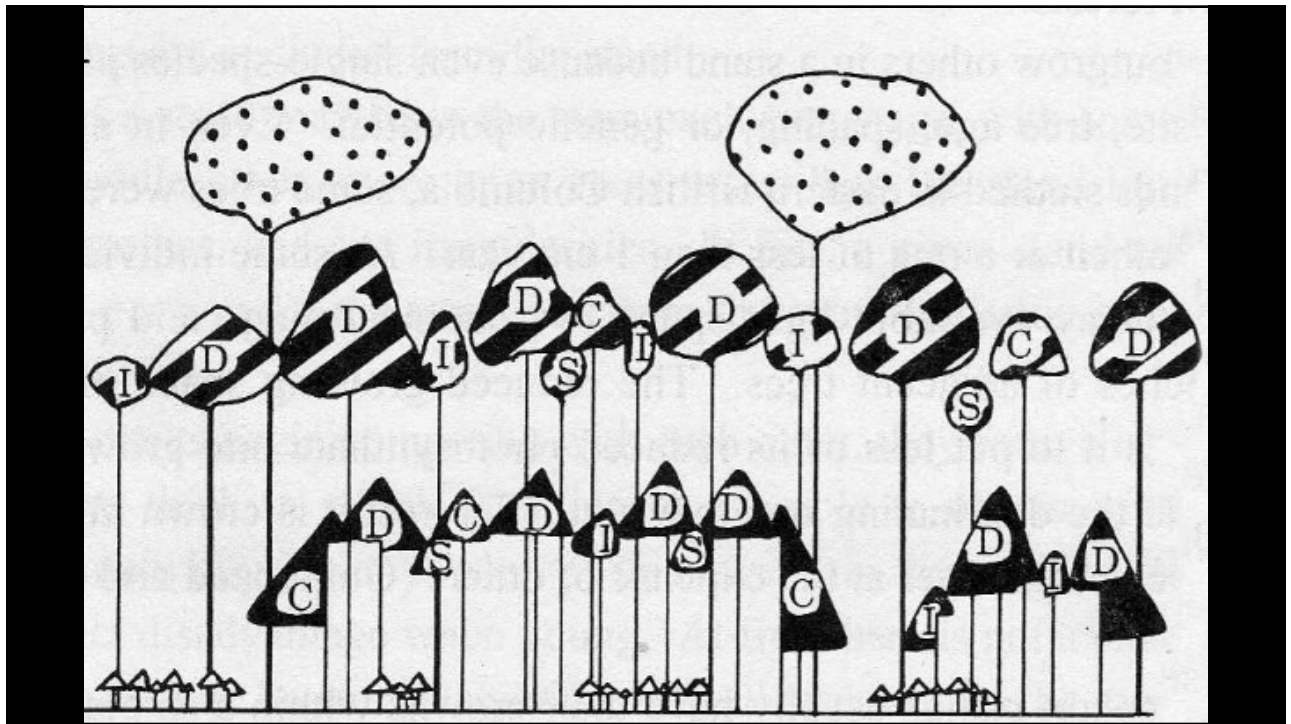
Outwash Soils



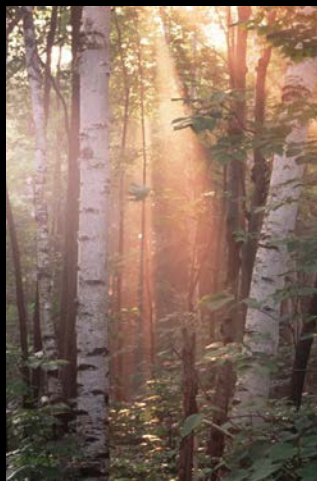
- Mostly sand and gravel, left by glacial meltwater.
- Very productive for White Pine







Shade Tolerance



White Birch



White Pine



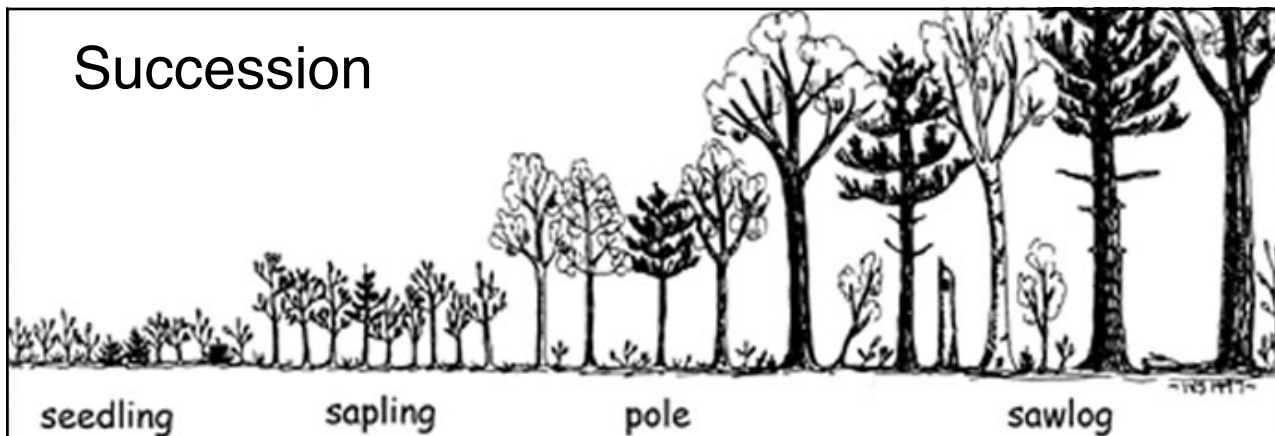
Eastern Hemlock

Softwoods

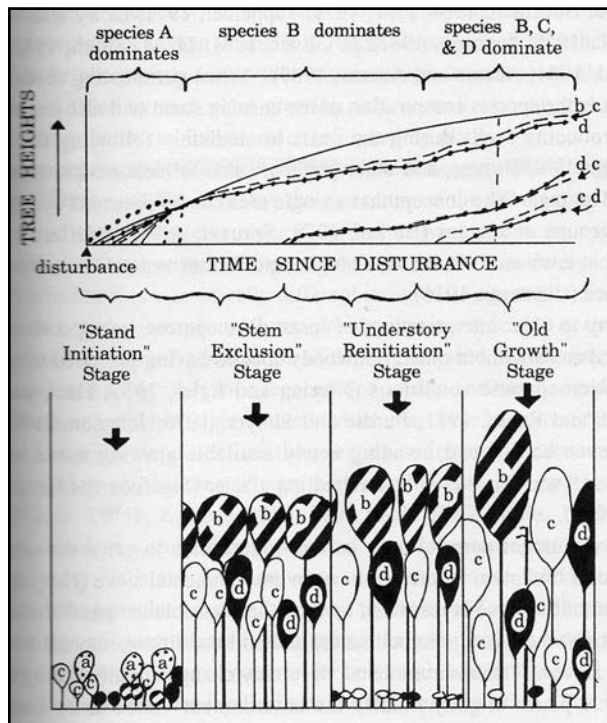
Hardwoods

Extremely Tolerant	
balsam fir	American beech
eastern hemlock	sugar maple
Tolerant	
red spruce	white spruce
northern white cedar	red maple
Intermediate	
eastern white pine	white ash
	red oak
	yellow birch
Intolerant	
red pine	paper birch
Extremely Intolerant	
	aspen

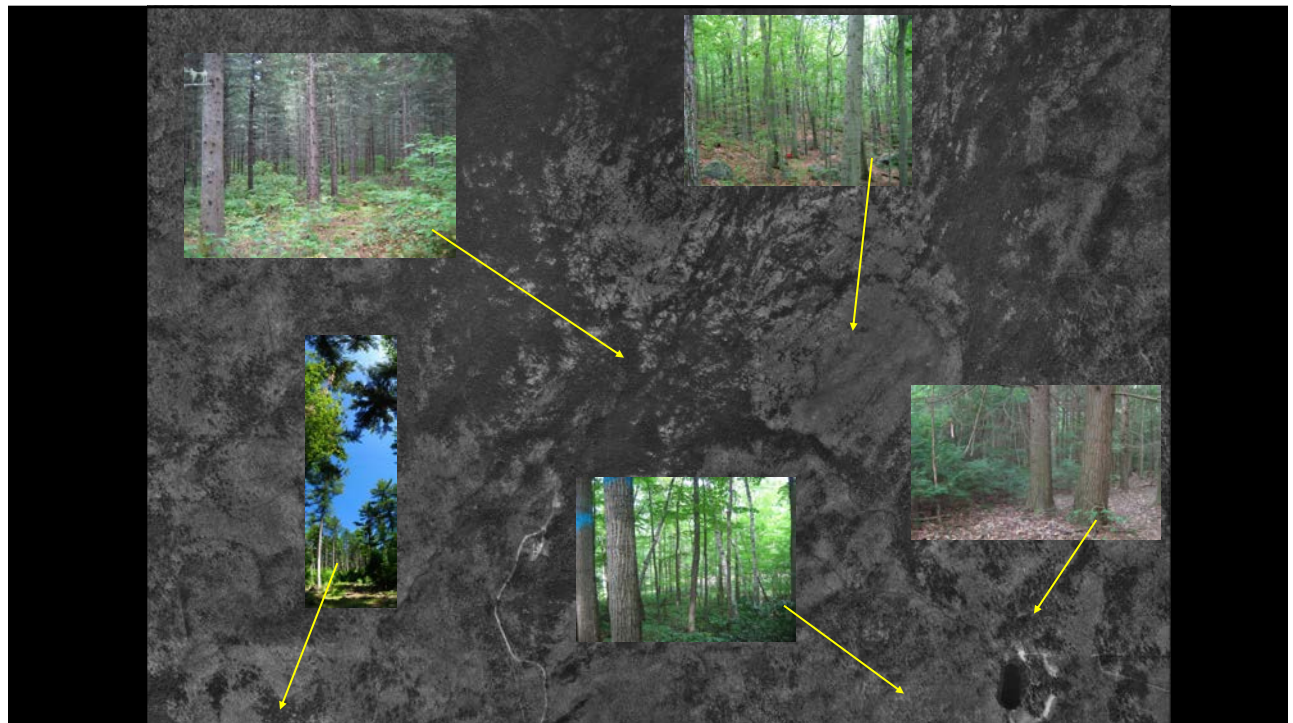
Succession



- The change in plant communities or structure over time
- As forest change food & shelter change and animal populations change
- Changing light conditions
- Soil temperature, nutrient moisture regimes
- Not a neat path of succession
 - differs by site
 - humans and natural disturbance



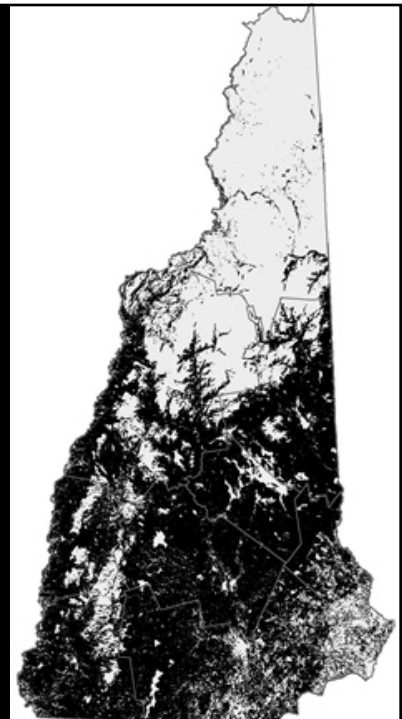
N. Haver in DeGraaf et al. 2006

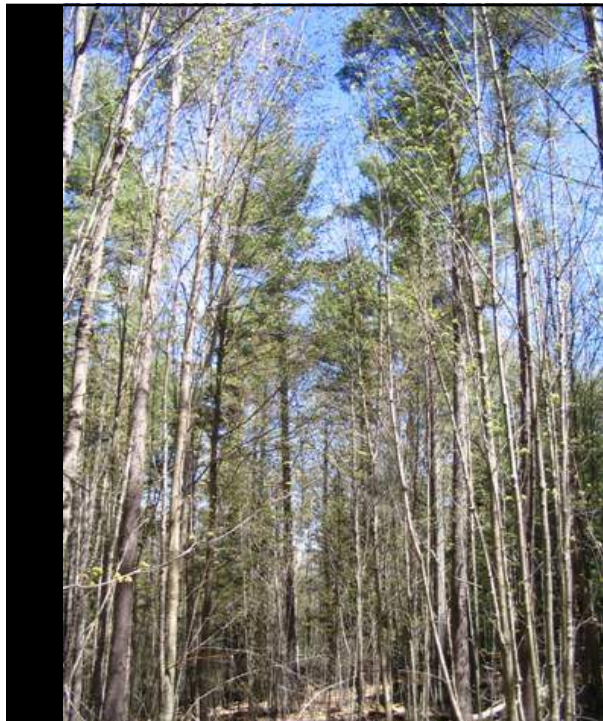
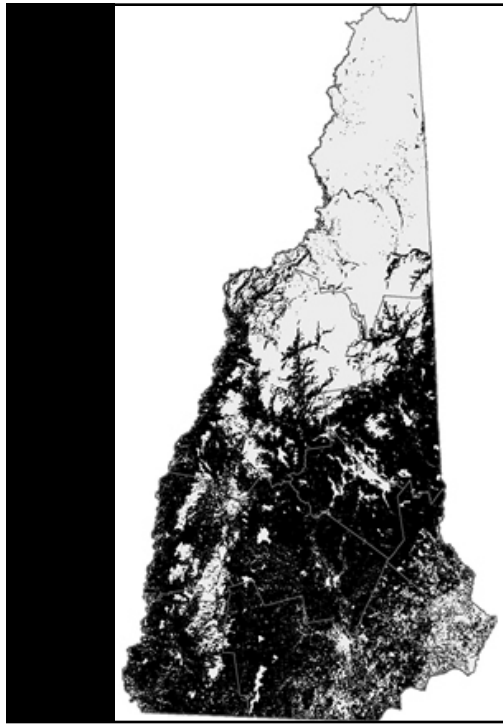




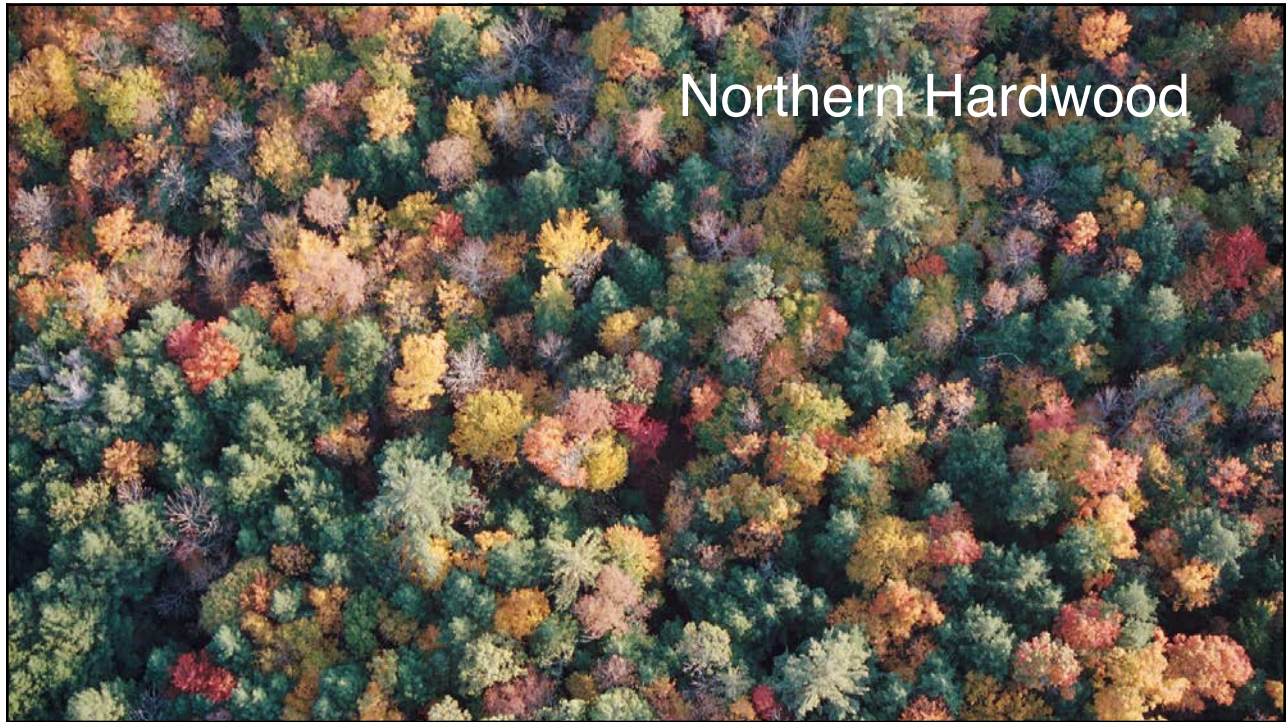
White Pine

- Most common type in Southern NH
- Pure stands or mixed with hemlock, red oak or other hardwoods
- Naturally found on sandy, poor, droughty sites
- Colonizer of abandoned agricultural lands
- Red squirrel, deer mouse, pine warbler, red-breasted nuthatch and owls (winter roosting)



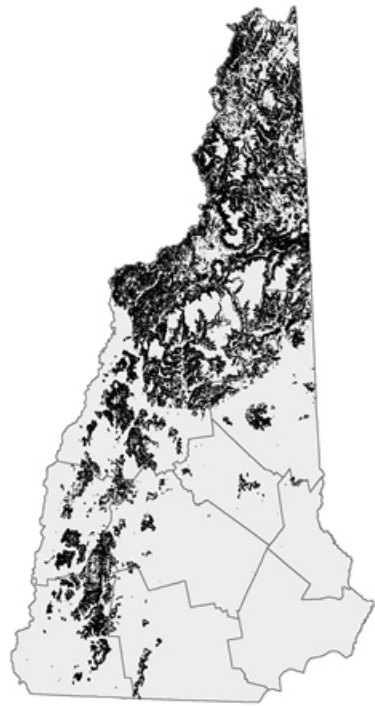


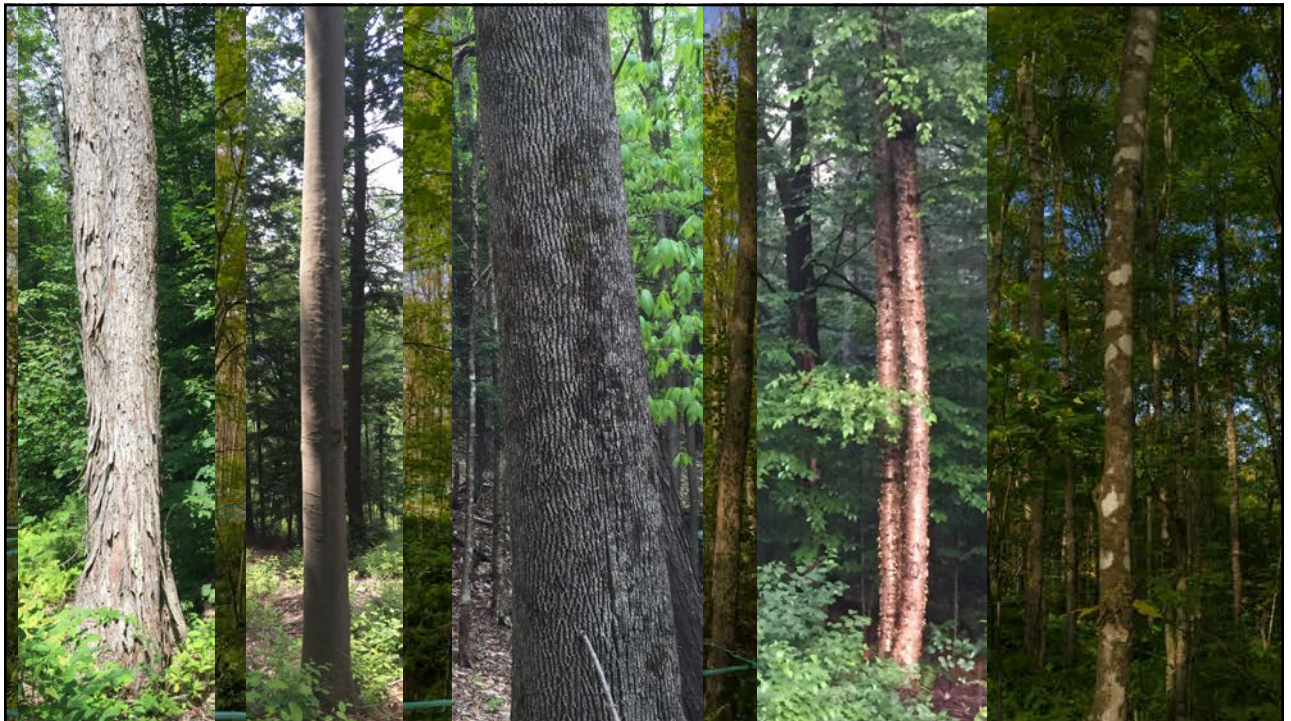




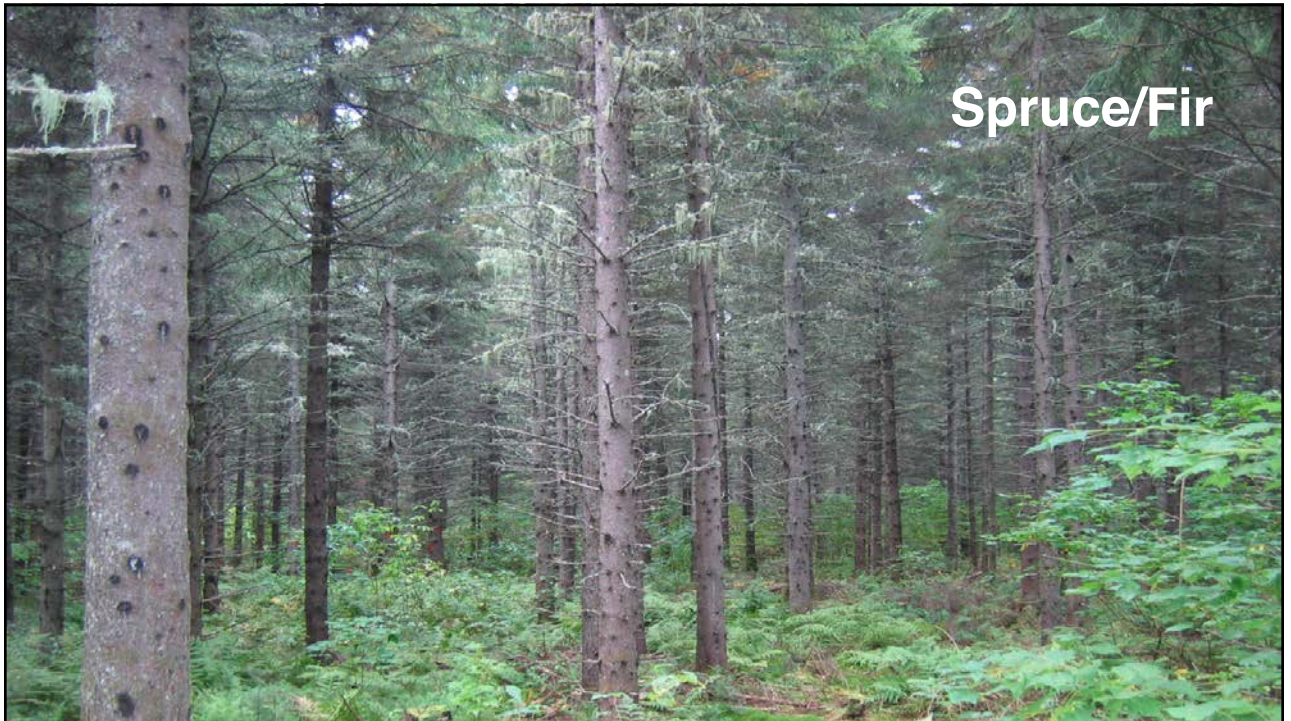
Northern Hardwood

- Common in central & northern NH, with stands along the highlands of southwestern NH
- Most abundant forest type in NH
- A mix of sugar maple, beech, yellow birch, red maple, white ash and conifers (site & disturbance matters)
- Gray fox, flying squirrel, red-eyed vireo, white-breasted nuthatch and ovenbird









Spruce/Fir

- Northern forest type found on poorly drained soils and shallow, rocky soils
- Dominated by red spruce & balsam fir with hemlock, white pine and red maple
- Susceptible to vast spruce budworm outbreaks
- Pine marten, snowshoe hare, gray jay, black-backed woodpecker, ruby-crowned kinglet and deer (winter cover)



Spruce/Fir

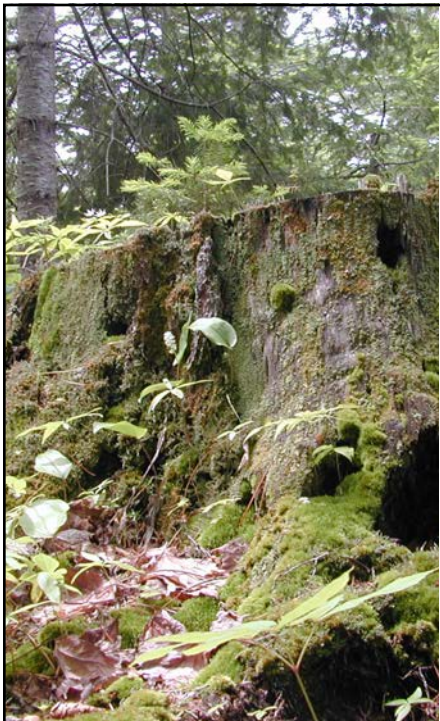


Northern
Hardwood

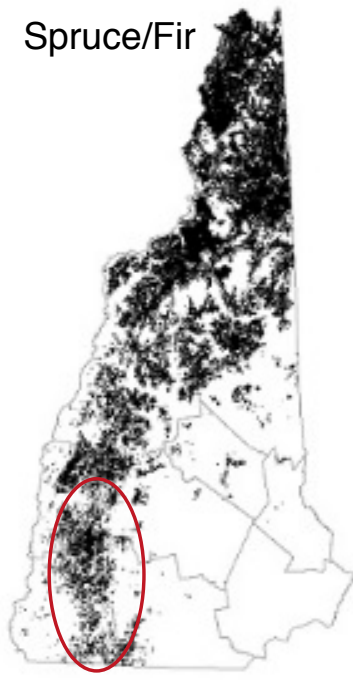








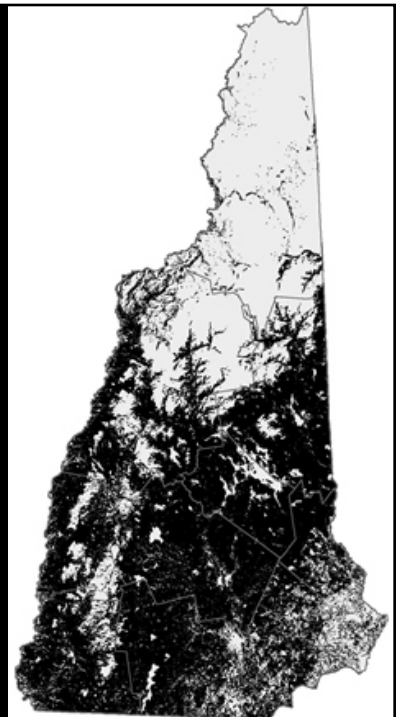
Spruce/Fir

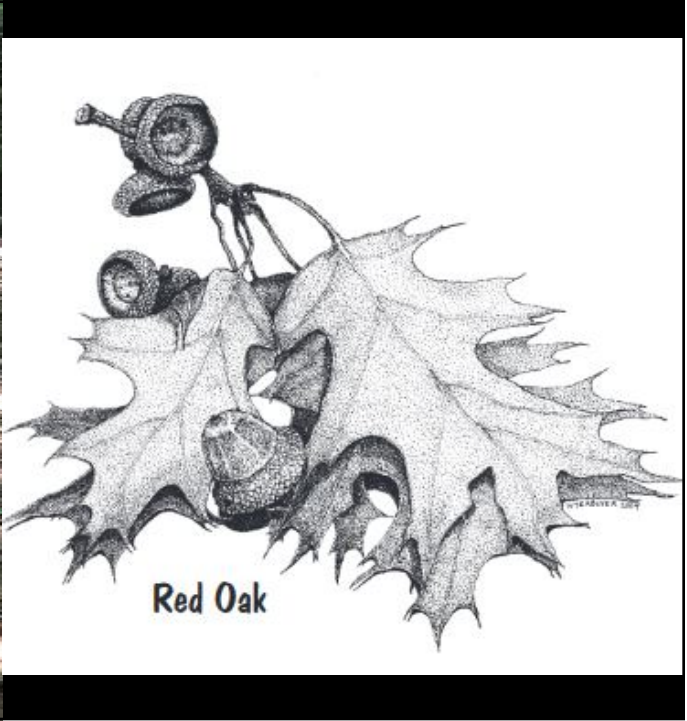




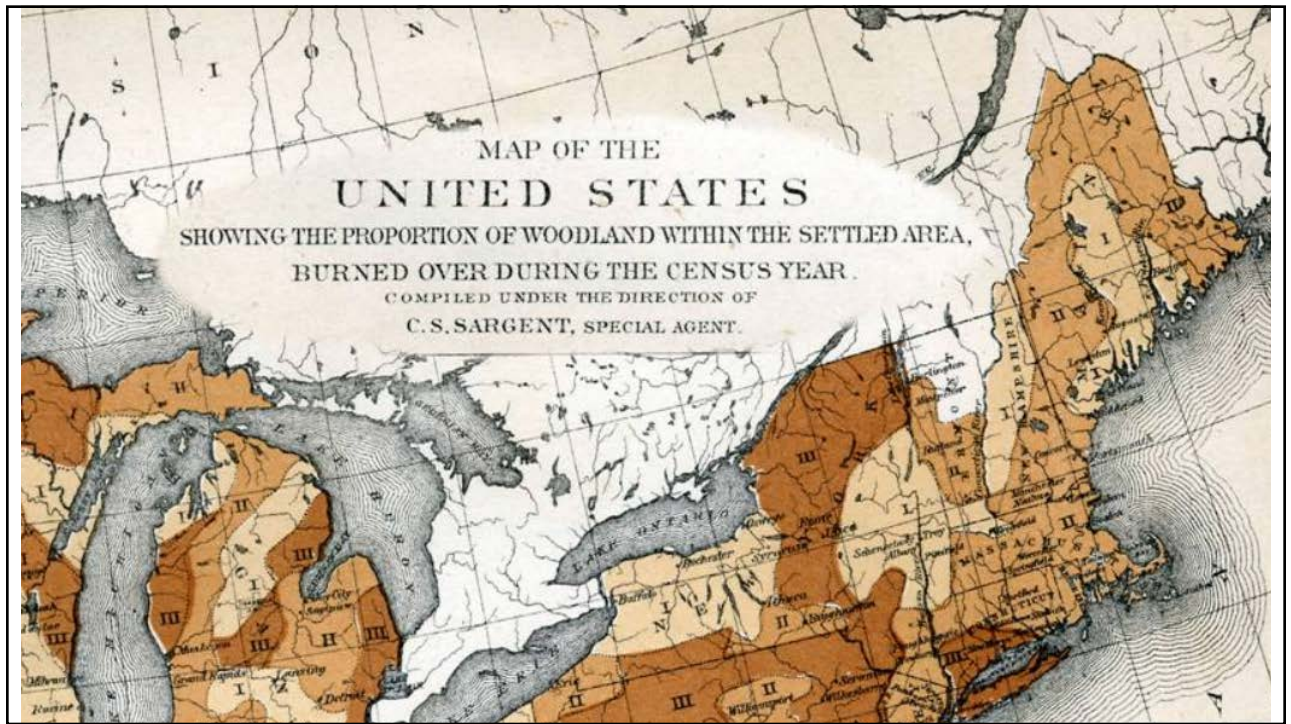
Red Oak

- Closely associated with white pine in southern NH
- Dominant on ridge tops in the south and mix with white pine on abandoned agricultural sites
- Red oak, white pine, black birch, red maple, hemlock and red spruce (to a lesser extent)
- Anyone who eats acorns, raptors and rodents





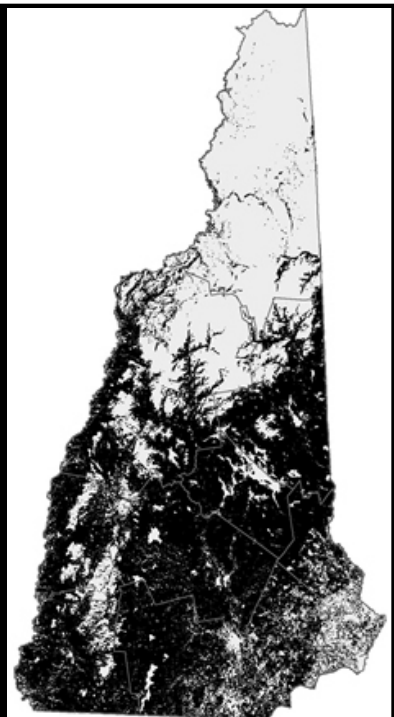






Hemlock

- Southern and central NH forest type
- Similar to Spruce/Fir in the north
- Pure stands or with red oak, white pine, other hardwoods.
- Black-throated green warblers, hermit thrushes, blue-headed vireos, porcupine and deer for winter cover











Aspen/Birch

- Pioneer species following dramatic stand replacing event
 - Fires
 - Clearcuts
 - Windstorm
- Relatively uncommon, quickly replaced by other forest types
- Can occur throughout the state
- Big-toothed and quaking aspen, paper (white) birch, pin cherry, raspberries and blackberries in young stands
- Ruffed grouse, woodcock, Nashville warbler, mourning warbler, and beaver



Final Considerations

- Each forest type is unique and influenced by site, climate, disturbances and history
- Management for each forest type is also unique
- Biggest threats to all these forest types is not natural disturbance or harvesting, it's conversion to development
- Current forest type may be a reflection of past land use and not natural conditions
- The aspen/birch type is steadily decreasing across NH