Eastern White Pine
Management Institute

Eastern White Pine Symposium: Management Trends

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Symposium/Workshop on the Management & Health of Eastern White Pine
March 23-24, NESAF Winter Meeting
June 23-24, 2022, Concord, NH

Isabella Munck	USFS, Durahm, NH	Field parameters associated with severity of Caliciopsis symptoms and white pine needle damage (WPND).
William Livingston	University of Maine,	Updates on insect pests of eatern white pine, including southern pine beetle outbreak in NC in 2000
Cameron McIntire	USFS, Durahm, NH	Drought and Eastern White Pine Health
Gregory Edge	Wisconsin Dept of Natural Resources	Eastern White Pine Management in Wisconsin: Use of patch cuts for regeneration (remote presentation)
Robert Cole & Jessica Cancelliere	NY Department of Env. Conserv.	Eastern White Pine Management in New York: Forest Conditions and Management Activities
Nicholas Brazee	University of Massachusetts	Eastern White Pine Management in Massachusetts: The Urban/Rural Interface
Robert Seymour	University of Maine	Eastern White Pine Management in Maine
Steven roberge & Karen Bennett	University of New Hampshire	Eastern White Pine Management in New Hampshire
William Livingston	University of Maine	Eastern White Pine: Past, Present, and Future

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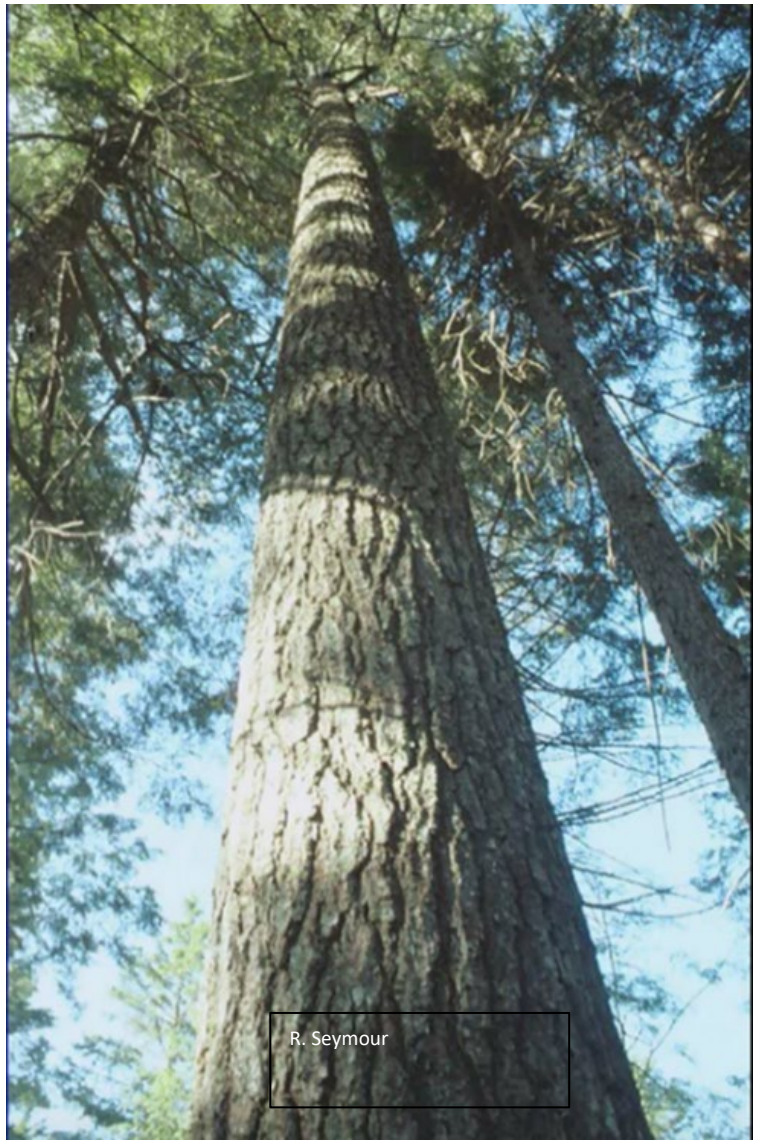
Zach Olinger	VA Dept. of Forestry	Eastern White Pine Management in Virginia.
Jim Phillips	Avery Timber Resources	White Pine Markets and Management of Natural Regeneration in North Carolina
		Reports of EWP management from other locations
George Weir	Consulting Forester	Managing Eastern White Pine on Woodlots in Southern Vermont
	Durgin & Crowell Lumber Co	Tour of White Pine Mill
	Mast Yard State Forest	Workshop on recognizing and quantifying white pine needle damage and Caliciopsis symptoms
	Bear Brook State Park	Workshop on low density management of white pine

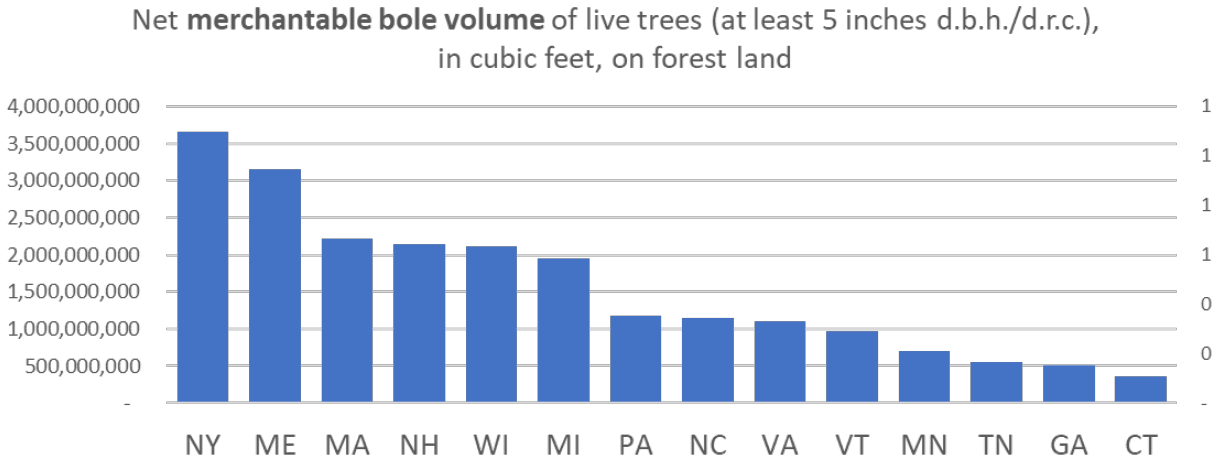
Symposium Proceedings to be published by the Center for Research on Sustainable Forests, University of Maine

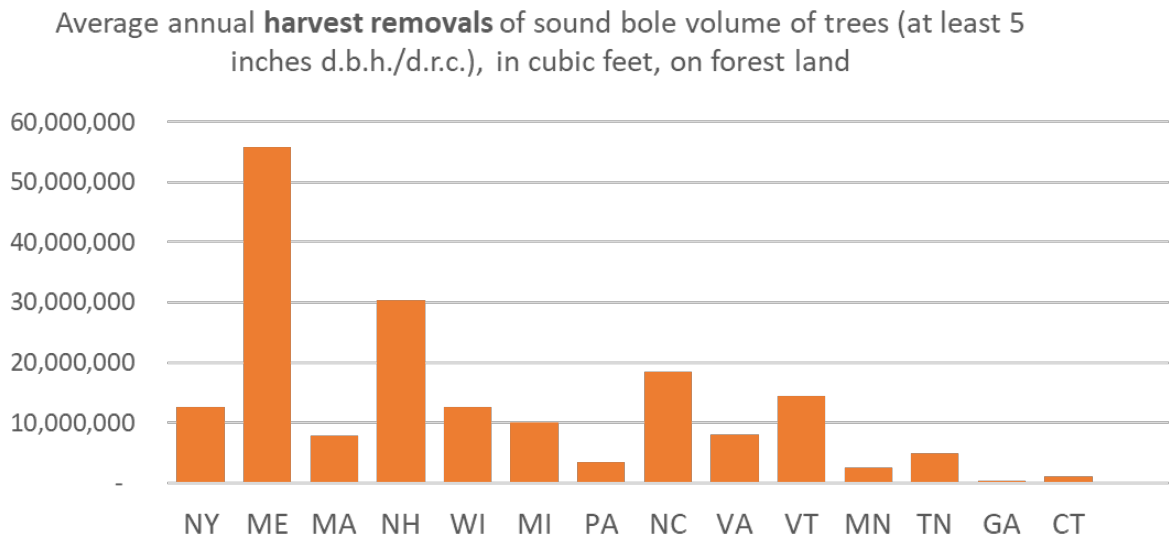
White Pine Silvics

- Intermediate shade tolerance.
- Seeds abundant every 3-5 years.
- Rooting best in deep, sandy soils.
- Strong competitor with grass.
- Once established,
  - Has excellent height and diameter growth.
  - Annual volume growth remains high even in large (>24 in DBH), older trees.



Management of EWP Across the Range





- Managed Stands
  - Healthy
  - Productive
  - Valuable
- Unmanaged Stands
  - Diseased
  - Low value

Challenges to Managing EWP

- Markets
  - Excellent sawtimber markets in ME, NH, NC
  - No value for EWP pulp anywhere
  - Tipping in VA and NC
- Regeneration - not a problem
  - Plantation
  - Shelterwood
  - Overstory removal after mixed species established
    - Patch or Large area
  - Favor high densities to improve form, reduce browsing damage
- Intermediate treatments - space stands to B or Low
  - Leave best trees
  - No markets - can't earn income
  - Dependent on utilizing as investment or legacy
  - Who will do the work?
- Sawtimber - how long leave?
  - Overstory removal
  - Extended shelterwood or legacy trees

Markets

- Alderman et al. 2007, Forest Product Journal

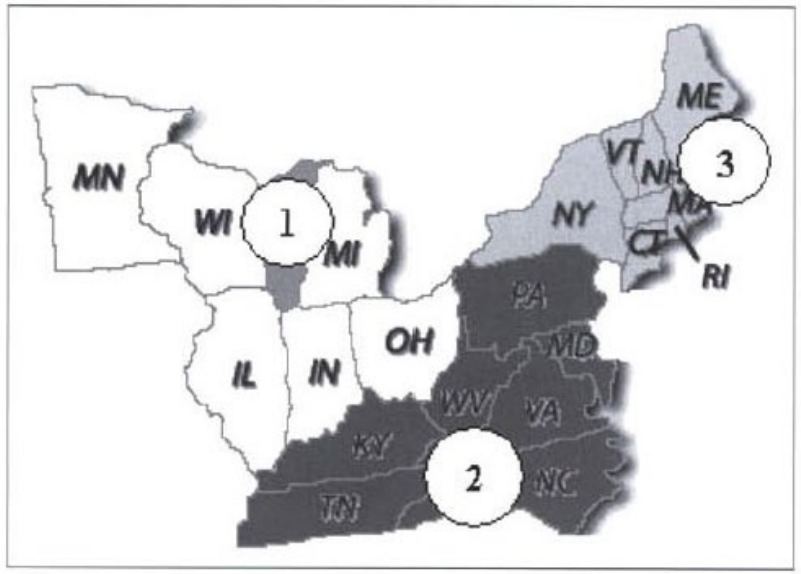
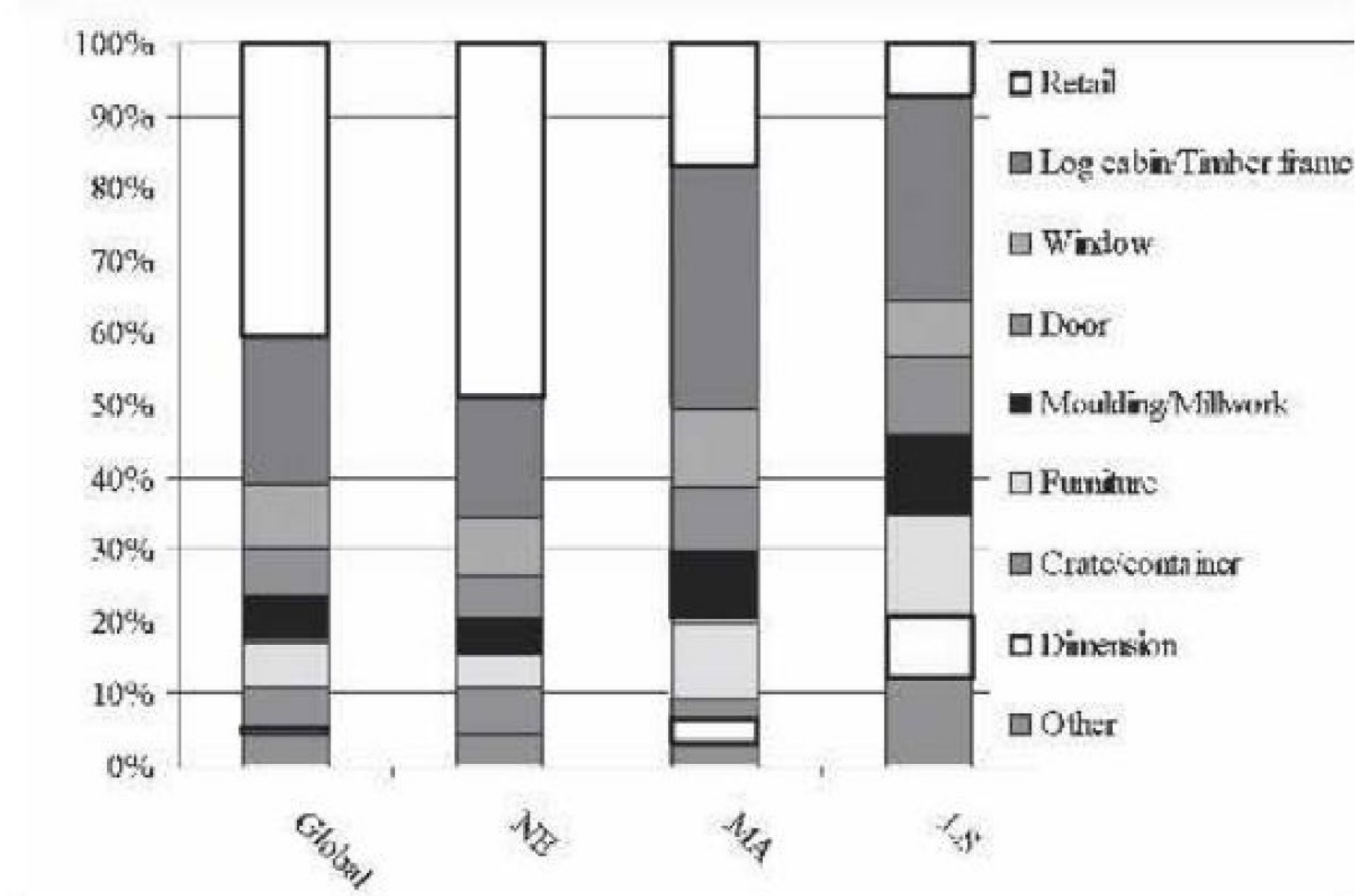


Figure 1. — Regional map and study regions: 1) Lake States, 2) Mid-Atlantic, 3) New England.



Regenerating Stands by Shelterwood

- Seeding cut –50% canopy cover, can go lower to 20%
- Allow site to develop ~2 years –break down slash and allow stump sprouting
- Kill hardwood sprouts with herbicides
- Monitor for good seed crop –late summer conduct understory site prep (chemical, mechanical, Rx fire) and scarification over at least 50% of stand
- Overstory removal once seedlings are established (3-10 years; goal = 700 stems/acre); retain ≤20-30% canopy cover
  - Open conditions favor pine over tolerant species
  - Keep “trainer trees” (keep pine strait, self-pruning)
  - High density minimize weevil damage

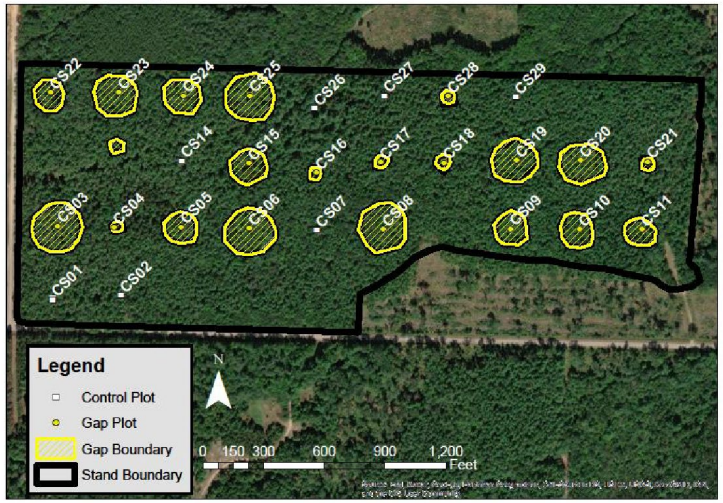
Regeneration by Plantations (VA, NC)

- Clearcut site.
- Site prep:
  - Harvesting scarification usually enough
  - Need some organic ground layer
  - Prescribed fire can reduce slash and competitors
- Plant 400 trees/ac (ca. 12’X9’)
- Use herbicides to kill competition if needed.
- Intermediate treatments not needed - don’t stagnate, trees differentiate
- No white pine weevil problem
- Up to 50,000 bd ft in 50 years

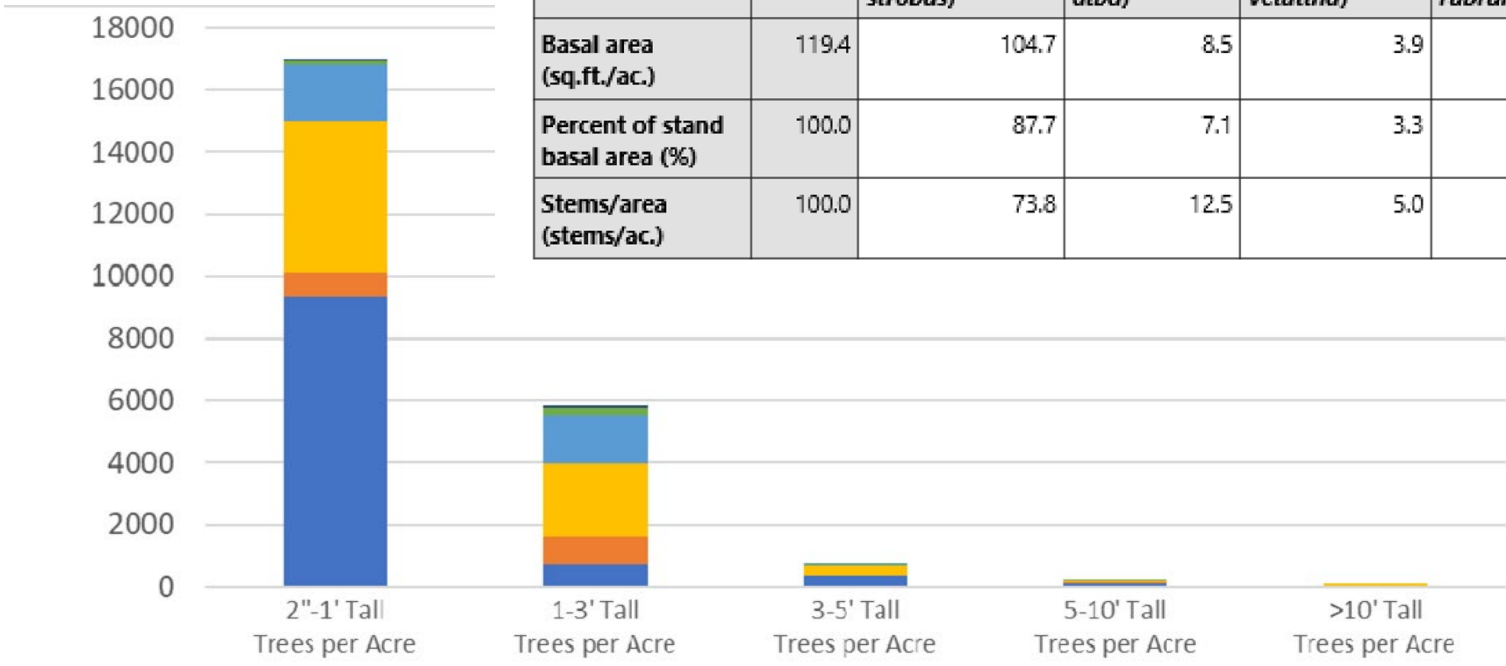
Regenerating Mixed Stands

- Wisconsin: Use patch cuts, mix EWP with HW
- Open conditions favor pine over tolerant species
- Keep “trainer trees” (keep pine strait, self-pruning)
- High density minimize weevil damage

Clay School White Pine Trial Site



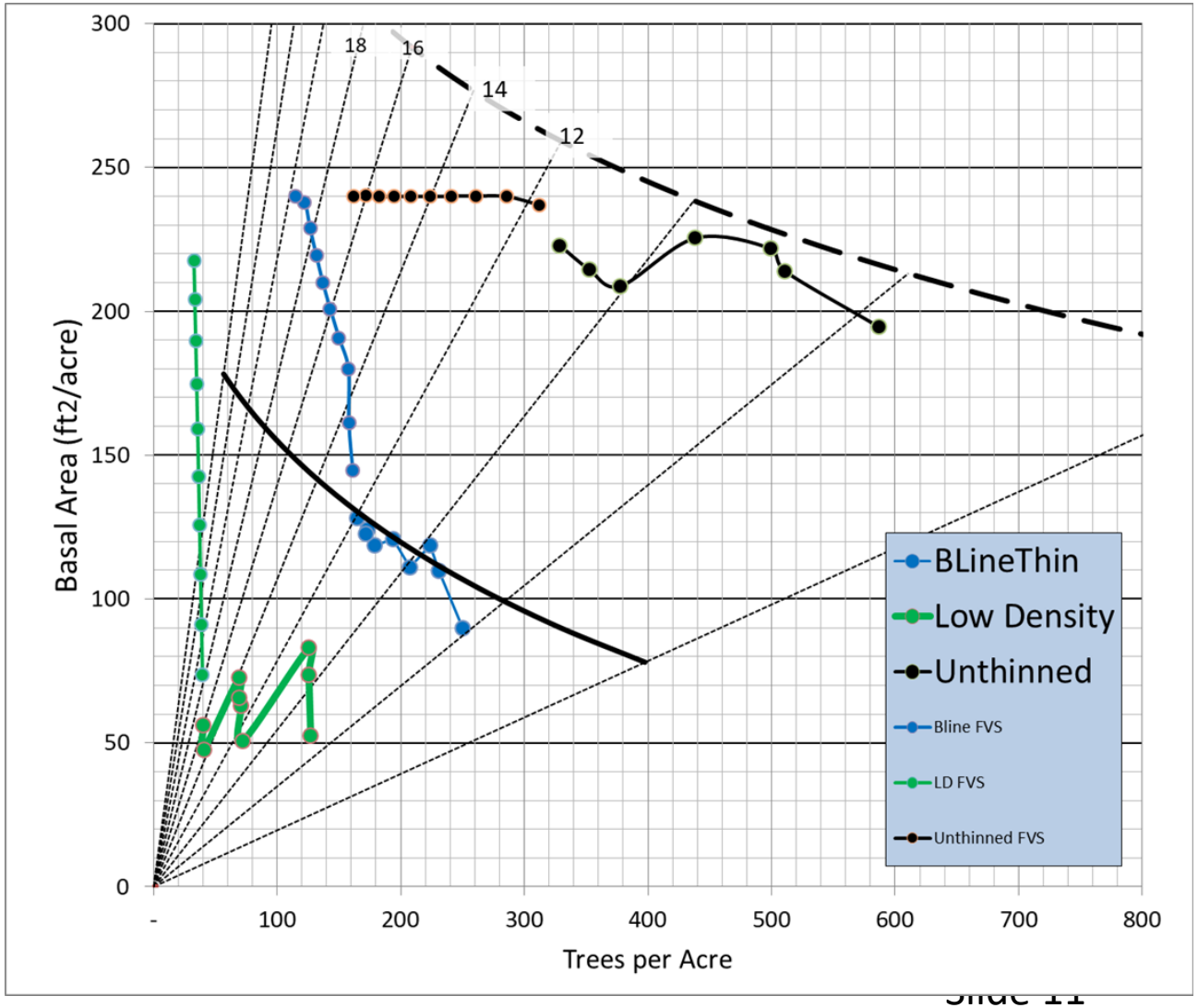
	All species	eastern white pine (*Pinus strobus*)	white oak (*Quercus alba*)	black oak (*Quercus velutina*)	red maple (*Acer rubrum*)
Basal area (sq.ft./ac.)	119.4	104.7	8.5	3.9	
Percent of stand basal area (%)	100.0	87.7	7.1	3.3	
Stems/area (stems/ac.)	100.0	73.8	12.5	5.0	



	2"-1' Tall Trees per Acre	1-3' Tall Trees per Acre	3-5' Tall Trees per Acre	5-10' Tall Trees per Acre	>10' Tall Trees per Acre
Aspen	33	52	0	0	0
Black Cherry	130	254	26	7	0
Black Oak	1852	1572	13	7	0
Red Maple	4833	2341	307	59	124
White Birch	0	7	0	0	0
White Oak	802	861	26	20	7
White Pine	9326	743	378	137	0

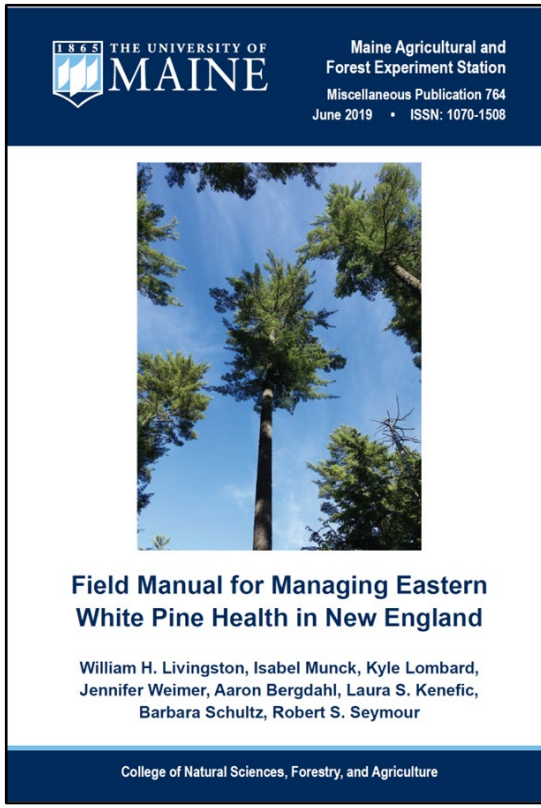
Overstory Removal & Intermediate Treatments

- Remove overstory after 15-20 years or use “extended shelterwood”;
  - But keep crop trees for continued growth, up to 50 trees/acre
- Wisconsin: Thin to “B” line to keep full stocking;
- New England: “B” line and low-density



Low Density Management: Manage for Quality

- Do not use if stand >150 sq ft ba and > 60ft, live crown ratio <25%
- Keep ht/dbh ratios below 80 (e.g. 80'/1') for wind firmness
- Use Spacing:Height ratio = 50% to prevent crown recession
- Prune branches on lower bole to avoid black knots
- 12-15 ft spacing at 20 ft tall (200-300 tpa)
- 20 ft spacing at 40 ft (100-120 tpa)
- 60-70 tpa at 60 ft
- 30-40 tpa at 80 ft (can start regenerating next stand)
- OSR - 26-28" dbh at 100' tall (30 tpa worth $500-$1,000 each)



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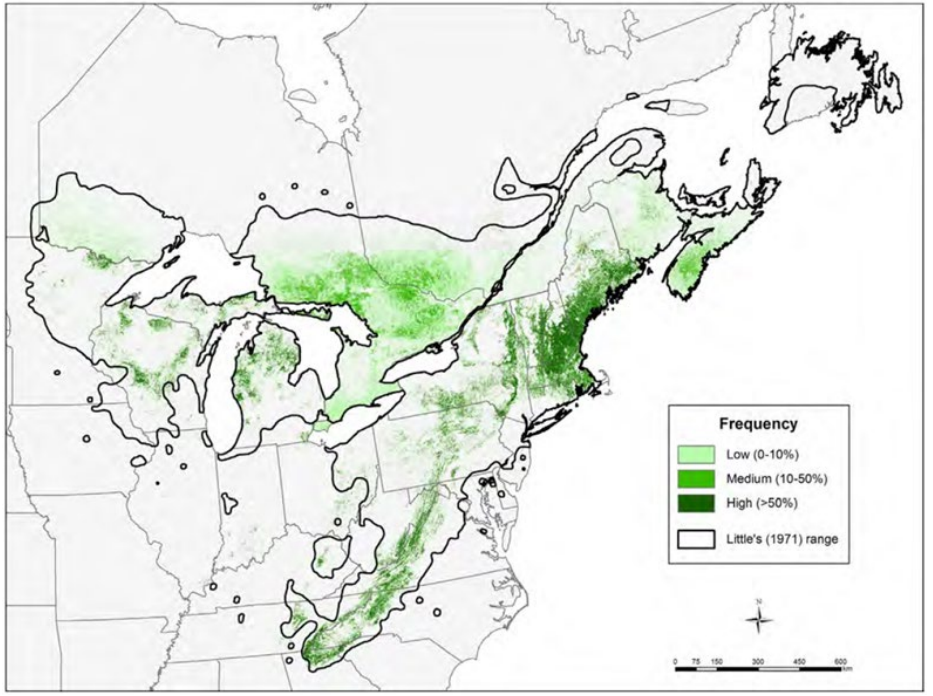

Managing Stand Densities Key to Reducing Risks

- High stand density at young ages (<20 ft tall)
  - Reduce weevil damage
  - Straighten trees
  - Natural pruning
- Low stand densities as mature
  - Reduce competition for water
  - More sunlight for growth
  - More tolerance for risks from drought, Caliciopsis, WPND, and SPB

Future of Eastern White Pine

- Challenges to management and abundance:
  - How well precipitation compensates for increased summ temperatures – will drought and bark beetle losses increase?
  - Under-utilized in much of the range
  - Weak markets for small trees
- Resource will remain abundant and valuable because:
  - Excellent natural regeneration
  - Warmer winters will result in increased growth and less weevil
  - Responds well to management for reducing risks and increasing growth and value
  - Excellent markets for sawtimber in New England