

## A Few Minutes on Oak-Pine-Hemlock Habitat Features








**Mariko Yamasaki**  
 USFS, Northern Research Station,  
 Durham, NH  
 2018 NE Silviculture Institute

## Oak Habitat Considerations – Cast of characters



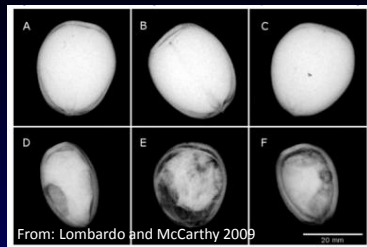







T. Rawinski      B. Thompson      D. Scott      D. McKenzie      NY DEC

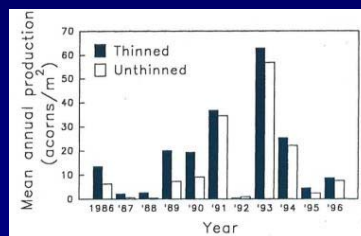
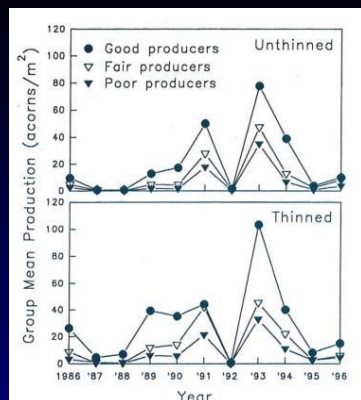


Curculidae: acorn weevil damage

Elateridae:  
wireworms/click beetlesNitidulidae:  
sap beetles

## Acorn predators/consumers -- Characters harder to see

	Surface nuts (n=200)	Buried nuts (n=200)
	----- Percent -----	
Acorns lost to:		
Animals	21.5-71	7-18.5
Insects	4.5-66.5	--
Unknown	0.5-2	17.5-24.5
Subtotal	77.5-88.5	24.5-43
Seedlings lost to:		
Animals	2-2.5	1.5-20.5
Insects	2.5-6	0-5
Unknown	0-17	0-2.5
Subtotal	7.5-22	6.5-23
Live seedlings	0.5-4	34-69



From: Healy 1997; Healy et al. 1999; Bellocq et al. 2005

## Oak Habitat Considerations – Acorn production

- Thinning 40-50% of BA around potential mast trees improves acorn production
- Targeted thinning around known acorn producers gives the greater benefit to acorn production
- Thinned stands -- 58-220K/ha
- Unthinned stands – 30-155K/ha
- Effect was greatest in poor years
- Considerable individual/annual variation

## Oak-Pine Habitat Considerations – Thinning and birds – 9 year results

- Fall 2008 mechanized harvest
- Site well scarified
- Very heavy WP seed fall in 2008



Low-density –  
60 RBA



Very low-density –  
40 RBA

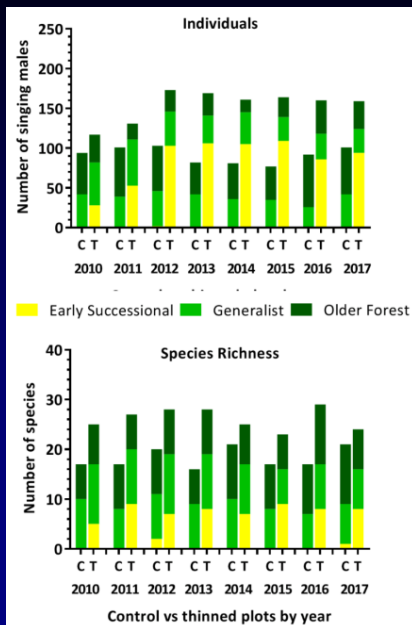
## Oak-Pine Habitat Considerations – Understory assessment



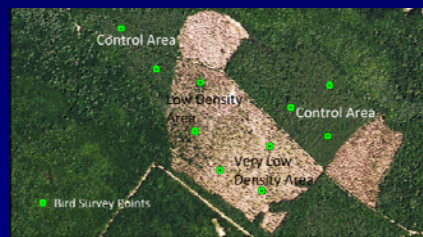
	Method	Large (0.5-3.4 in dbh)			Small (< 4.5 ft tall)	
		WP	RO/WO	OH	WP	RO/WO
2013	Stems/ac	~ 80	540	5075	3637	962
		Soft	Hard			
2017	Visual	55%	45%			



## Oak-Pine Habitat Considerations – Thinning and birds – 9 year results

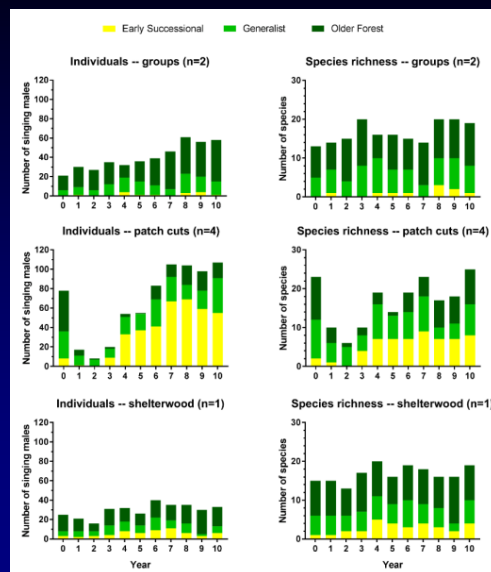


- 57 species observed to-date
- 5 species solely in the control
- 35 species in both control and thinning
- 11 species solely in the thinning
- A dense, mixed species regeneration layer is expected to be hare habitat in the future



From: DeGraaf et al. 1991; Yamasaki, unpublished

## Oak-Pine Habitat Considerations - Silvicultural treatments 10 year results



- 60 species observed to-date
- Year 0 are pre-cut observations in 2007
- Treatments create variable amounts of habitat for ES, GEN, and OF individuals and species richness
- ES individuals and species richness were greater in patch cuts
- GEN and OF individuals and species richness were higher in small group cuts and shelterwood treatment



## Oak Habitat Considerations – Forest raptor nest sites



- Basket forks or multi-limbed crotches make secure forest raptor nest sites
- Repeatedly used in many cases
- Often removed in stand improvement practices
- Where active – think about timing and area buffers

See: Bennett 2010

## Oak Habitat Considerations – Cavity tree habitat

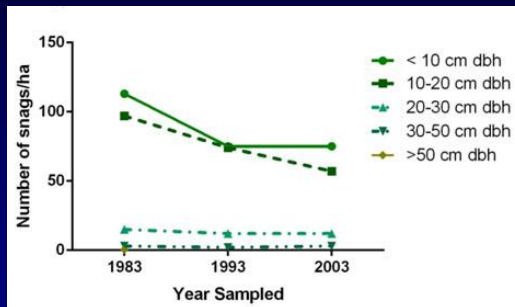


From: Healy et al. 1989

n=11,062	Cavities		
Total trees sampled	In live trees	In dead trees	In snags
Percent	3	3	20
No. of stems	289	45	64

- 93% - mammal dens or escape holes
- 6% - bird nest holes
- Only 4% of cavities suitable for PIWO
- Cavity trees accounted for 4% of BA in thinned stands and 8% of BA in unthinned stands
- Ground searches underestimate cavity numbers in crown by 20%

## Oak Habitat Considerations – Dead tree availability



- Periodic GM outbreak
- Higher mortality in smaller dbh classes
- Smaller dbh classes fell faster than larger classes and became CWD
- Larger dbh classes were stable and became CWD when they fell

From: Wilson and McComb 2005

## Oak Habitat Considerations – Coarse woody debris

Diameter (cm)	1983-1993	1993-2003
Percent snag fall		
< 10	71	76
10-20	55	61
20-30	42	43
30-50	25	66
> 50	100	-

- Smaller trees fall sooner than larger ones (usually)
- 35.9 oak logs/ha (14.5 logs/ac) across Cadwell Forest at the end of the study
- 109.9 logs/ha (44.5 logs/ac) total

From: Wilson and McComb 2005

## Oak Habitat Considerations – Thinning and northern redback salamanders



From: Brooks 1999

- Neither thinnings removing 40-50% of BA nor deer density affected PLCI numbers
- PLCI numbers correlated with density of tall woody stems > 1m and number of pieces and area of CWD

## Oak Habitat Considerations -- Special concerns around oak



- Increases in GM density are associated with declines in PELE density
- Changes in density correlated with acorn crop densities
- At low GM levels PELE can regulate GM
- And then there's Lyme disease – that's for another day

From: Elkinton et al. 1996; Yahner and Smith 1991

## Vernal pools and herps – where are they found?



- Poorly drained and very poorly drained soils
- Sandy loams over sediments
- Maintain their integrity



## Hemlock Understories – cover



- Bark stripping of young saplings
- When dense – hare habitat and all that hunt them
- Rocky piles/culverts as den sites

