

Oak Habitat Management Opportunities



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Oak Habitat Considerations

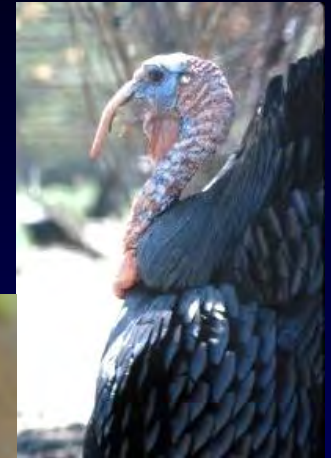


- Cast of characters
- Food - acorns
- Forage - browse
- Feeding substrate – insects
- Cover – regeneration
- Cover – thinning effects
- Cover – raptor nest sites
- Cover – cavity tree habitat
- Cover – coarse woody debris
- Special concerns about oak

Oak Habitat Considerations – Cast of characters



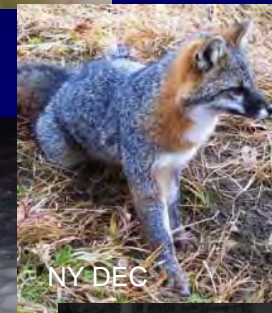
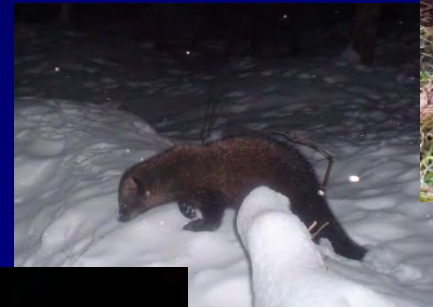
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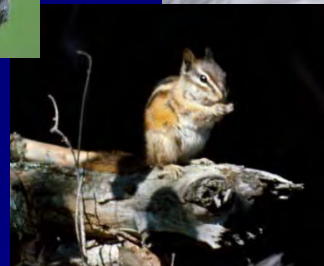
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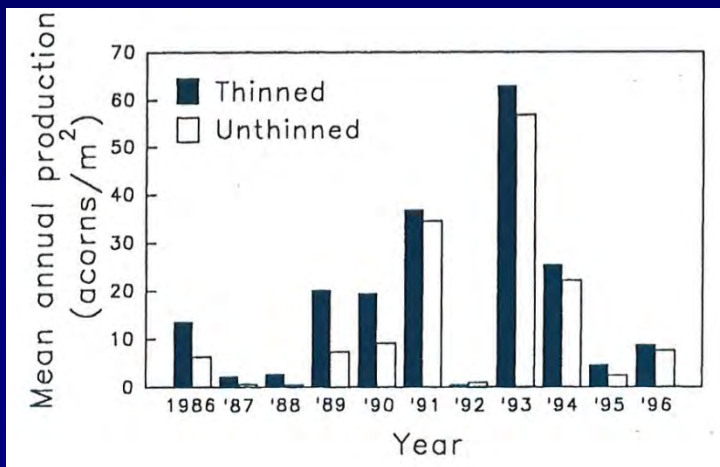
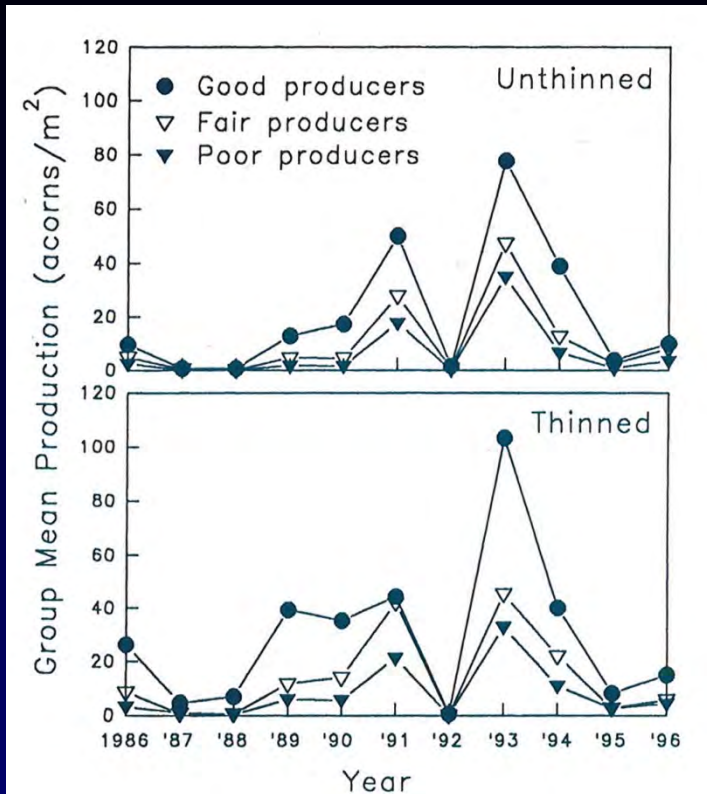
Oak Habitat Considerations -- Acorns



- High caloric food for a variety of species
- Higher tannin and phenol levels found in red oaks than white oaks
- White oaks are more palatable and digestible
- Mixed diets can minimize tannin/phenol effects

From: Servello and Kirkpatrick 1989; Chung-MacCoubrey 1997

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

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

Oak Habitat Considerations -- Browse



- Regeneration cuts of various sizes on the appropriate sites and thinnings can produce interesting oak cover conditions
- Shelterwood cuts
- Group selection releasing advanced regeneration
- Stump sprouts
- Prescribed fire – when oak stems are thumb-sized above root collar
- Oak sprouts as browse



Oak Habitat Considerations -- Feeding substrate for insects



- Periodic or episodic insect outbreaks can influence breeding bird activity in stands
- Gypsy moth and yellow-billed/black-billed cuckoo interactions
- Forest tent caterpillar
- Winter moth incursions – interactions unknown as yet
- Bird-friendly, managed stands are part of IPM control efforts

From: Crawford et al. 1983; DeGraaf 1987; Parry et al. 1997; Simmons 2013; Barber et al. 2008

Oak Habitat Considerations -- Regeneration



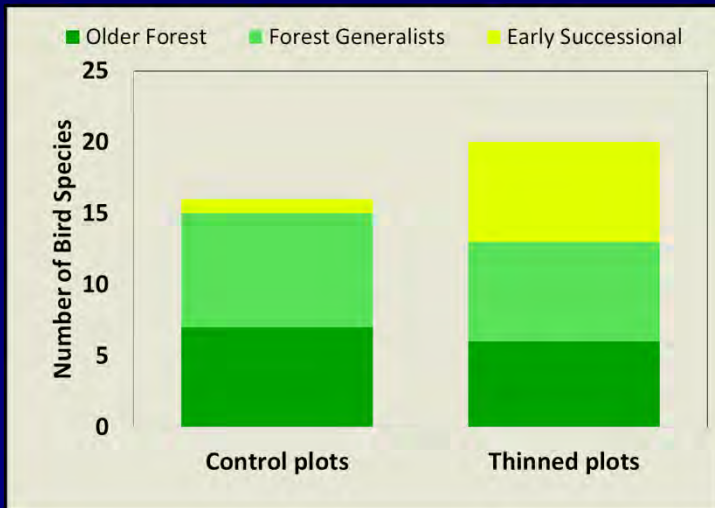
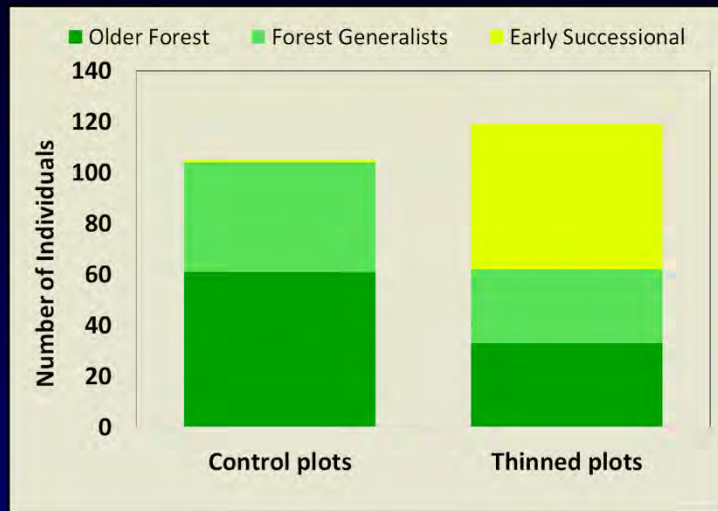
- Site relationships
- Past agricultural activity
- Blue jay and sciurid activity related
- Acorn predation levels
- Acorn protection strategies
- Artificial assistance

Oak Habitat Considerations – Thinnings and birds

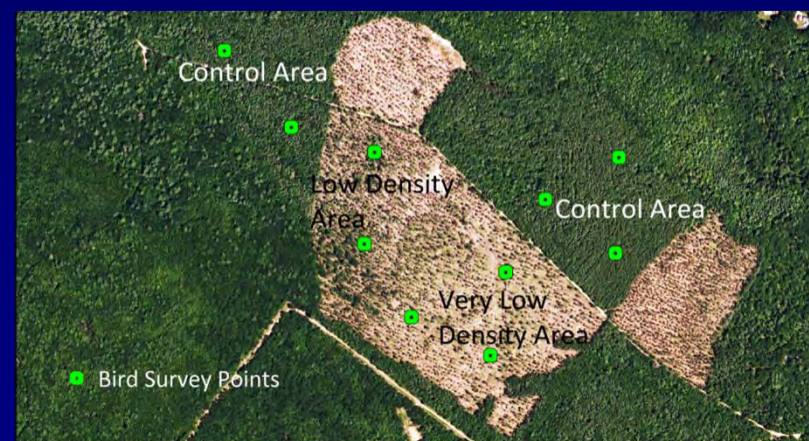
Deer density	Thinned stands	Unthinned stands
Few	Dense, tall woody understory; mod. ground cover	Mod. dense woody understory; little ground cover
Many	Sparse woody understory; lush ground cover	Sparse woody understory; little ground cover
Few	> bird species > omnivores and ground gleaners	< bird species
Many	> bird species > omnivores and ground gleaners	< bird species

From: DeGraaf et al. 1991

Oak Habitat Considerations – Thinning and birds



- 24 species were observed
- 4 species solely in the control
- 12 species in both control and thinning areas
- 8 species in only the thinning area
- The developing regeneration layer is expected to provide hare habitat in the near future



From: DeGraaf et al. 1991; Yamasaki, unpublished

Oak Habitat Considerations – Thinning and northern redback salamanders



- 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

From: Brooks 1999

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

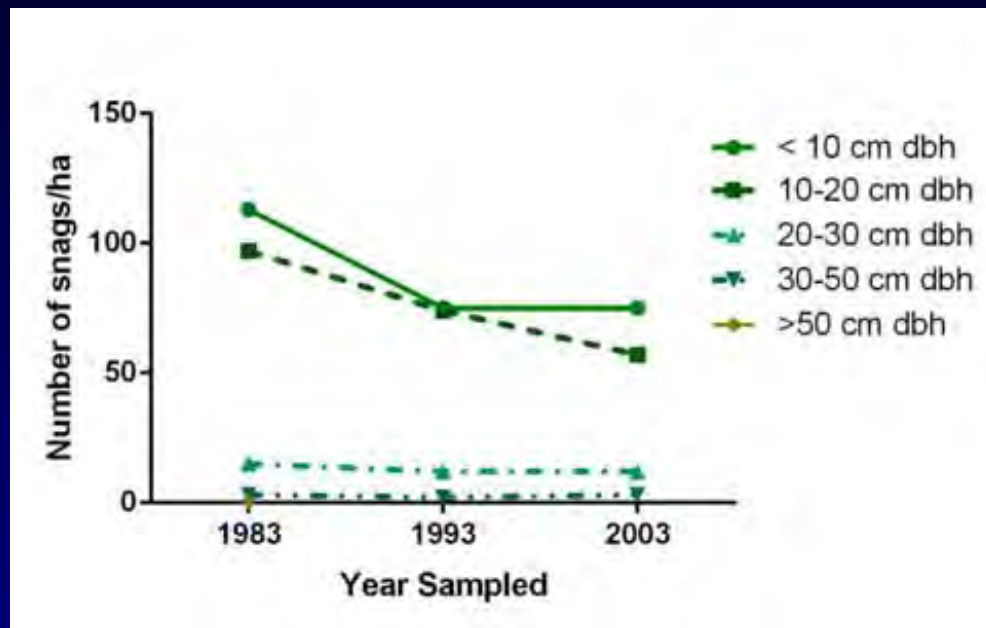


n=11,062	Cavities		
Total trees sampled	In live trees	In dead trees	In snags
Percent	3	3	20
No. of stems	289	45	64

- 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%

From: Healy et al. 1989

Oak Habitat Considerations – Dead tree availability



- Periodic GM outbreak
- Higher mortality in smaller dbh classes
- Smaller dbh classes have fallen faster than larger classes and become CWD
- Larger dbh classes remain stable and become CWD when they fall

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

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