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

ND Scott
B Thompson
D McKenzie

NY DEC
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

<table>
<thead>
<tr>
<th>Deer density</th>
<th>Thinned stands</th>
<th>Unthinned stands</th>
</tr>
</thead>
<tbody>
<tr>
<td>Few</td>
<td>Dense, tall woody understory; mod. ground cover</td>
<td>Mod. dense woody understory; little ground cover</td>
</tr>
<tr>
<td>Many</td>
<td>Sparse woody understory; lush ground cover</td>
<td>Sparse woody understory; little ground cover</td>
</tr>
<tr>
<td>Few</td>
<td>&gt; bird species &gt; omnivores and ground gleaners</td>
<td>&lt; bird species</td>
</tr>
<tr>
<td>Many</td>
<td>&gt; bird species &gt; omnivores and ground gleaners</td>
<td>&lt; bird species</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Total trees sampled</th>
<th>In live trees</th>
<th>In dead trees</th>
<th>In snags</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent</td>
<td>3</td>
<td>3</td>
<td>20</td>
</tr>
<tr>
<td>No. of stems</td>
<td>289</td>
<td>45</td>
<td>64</td>
</tr>
</tbody>
</table>

- 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

<table>
<thead>
<tr>
<th>Diameter (cm)</th>
<th>1983-1993</th>
<th>1993-2003</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Percent snag fall</td>
<td></td>
</tr>
<tr>
<td>&lt; 10</td>
<td>71</td>
<td>76</td>
</tr>
<tr>
<td>10-20</td>
<td>55</td>
<td>61</td>
</tr>
<tr>
<td>20-30</td>
<td>42</td>
<td>43</td>
</tr>
<tr>
<td>30-50</td>
<td>25</td>
<td>66</td>
</tr>
<tr>
<td>&gt; 50</td>
<td>100</td>
<td>-</td>
</tr>
</tbody>
</table>

- 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 -- 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