Integrating Forest Management and Wildlife

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Nov. 16, 2004

Forest Characteristics

- Site descriptors such as aspect, elevation, and soil types
- Site Index – a way of describing the productivity of the site
- Successional status may drive your management

Effects of Silvicultural Practices

- Applied to improve the condition and value of a forest in timber or economic or ecological terms
- These practices are an important catalyst for either positive or negative effects on wildlife habitat

Management of Succession

- Any forest practice that removes vegetation or alters vegetative structure will alter the stage, rate, or path of succession.
Regeneration of Existing Stands

- Identify your objectives:
  - Wildlife
  - Timber production
  - Stand Improvement
  - Aesthetics
  - Others

- Customize your management plan based upon the most viable options to achieve the objectives.

Management Options

Even-Aged Management

- Provides various successional stages
- Horizontal habitat diversity
- Less expensive
- Favors shade intolerant trees
Even-Aged Management

- Lacks vertical diversity
- Mature trees and snags not prevalent
- Reduces diversity in several areas
- Increases fragmentation
- Less eye appealing

Even-Aged Techniques

- Clearcutting
  - Increase edge habitat
  - Increase openings
  - Uneven edges and patterns are good
  - Looks “bad”
  - Potential for soil problems

- Favors:
  - Early successional species
  - Edge species

Improving habitat through clearcuts

- The smaller the size, the better
  - Sizes of 1 to 50 acres are desirable
- Irregular shape increases benefit
  - Increases edge habitat
- For large (> 50 acre) clearcuts
  - Corridors of 100 ft wide or more left for wildlife movement
- Riparian Zones should always be protected
Natural Regeneration

- Advantages
  - Low cost
  - Site adapted species
  - Less soil disturbance
  - “Natural diversity”

- Disadvantages
  - Less control over spacing and stocking
  - Longer rotations
  - Increased maintenance over the life of the stand

Artificial Regeneration

- Advantages
  - Control spacing and stocking of seedlings
  - Can introduce new, improved genetics to the seed bank

- Disadvantages
  - High cost
  - Increased site disturbance depending upon level of site prep

<table>
<thead>
<tr>
<th>Spacing (ft)</th>
<th>Trees/Acre</th>
<th>Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 X 20</td>
<td>109</td>
<td>Lots of herbaceous plant cover, no crown closure. Great for wildlife, poor for timber.</td>
</tr>
<tr>
<td>15 X 15</td>
<td>194</td>
<td>Lots of herbaceous plant cover, delayed and reduced crown closure. Great for wildlife, poor to fair for timber.</td>
</tr>
<tr>
<td>12 X 12</td>
<td>303</td>
<td>Good herbaceous plant production, delayed crown closure. A good compromise between timber and wildlife.</td>
</tr>
<tr>
<td>10 X 12</td>
<td>363</td>
<td></td>
</tr>
<tr>
<td>8 X 12</td>
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<tr>
<td>8 X 10</td>
<td>545</td>
<td></td>
</tr>
<tr>
<td>6 X 8</td>
<td>908</td>
<td>Short herbaceous growth period, rapid crown closure. Poor for wildlife, good for timber.</td>
</tr>
<tr>
<td>6 X 6</td>
<td>1210</td>
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Site Preparation

• Typically used in a pine plantation setting
• Can cause significant soil disturbance
• Can create habitat (windrows)

Site preparation

• Mechanical
• Chemical
  – Can be used to favor plants that are beneficial to wildlife
• Burning (can be combined with the above two types)
  – Fell and burn
  – Brown and burn
**Seed-Tree**

- All but a few seed-bearing trees harvested.
- Generally 10-15 seed trees per acre left.
- Timing of seed fall and viability a concern

**Shelterwood Cuts**

- Trees removed in two or three cuts over time.
- Keep shade on the site
- Increase herbaceous production
- Encourage regeneration of species that require some light, but not full sun

**Wildlife and Shelterwoods**

- Provide vertical and horizontal diversity
- Typically have less soil disturbance than clearcuts
- Less early successional habitat
- Do provide short-term multilevel canopies
- Provide structure for canopy dwelling species while providing light for regeneration
Uneven-Aged Management

- Vertical diversity
- Diversity of tree species, ages, and sizes
- Less intense stand disturbances
- More mature trees and snags
- More contiguous canopy
- Favors shade tolerant trees

Uneven-Aged Management

- Less early successional habitat
- Higher timber management and harvest costs

Group Selection

- Used most in mixed hardwood stands
- Works best to utilize advanced regeneration
- Involves removing tree group of less than 2 acres.

Group Selection

- Provides a mixture of intolerant and tolerant species
- Promotes understory herbaceous growth
- Increases stand structure and species diversity
Group Selection

- Aesthetically pleasing
- Provides landowners with a steady stream of income
- More practical on small ownerships

Single-tree Selection

- Removal of individual trees
- Can be used to harvest marketable trees or to remove undesirables
- Good in sensitive site areas, such as riparian zones
- Provides consistent forest habitat with little canopy disruption

Single-tree Selection

- Does not regenerate shade intolerant species
- Can easily lead to high-grading
- Can be used to improve species mix for mast production

Other Forest Operations
Intermediate thinnings

• Used to:
  – Improve tree growth and quality
  – Reduce tree mortality
  – Obtain periodic income
  – Protect stand from damage
  – Improve wildlife habitat

Pre-commercial thinning

• Reduce stocking
• Provide openings for wildlife and herbaceous plant growth
• Can be used to “fix” spacing problems

Commercial thinning

• Provides income to landowner from closed canopy forest
• Reduce crown cover to encourage herbaceous vegetation

Commercial Thinning

• Create structural diversity in the stand by creating patch thinnings
• Promotes herb, shrub, and midstory structure that many species need.
Wildlife Thinning
- Use herbicides to inject and kill undesirable trees
- Allows more light to the forest floor to encourage understory growth
- No site disturbance
- Lots of snags created
- Can be used in conjunction with TSI

Working with Herbicides
- Timing is important
  - Late summer applications tend to have the best results
  - Spring and summer applications will also work
    - Be sure to use a surfactant with these applications.
    - Know the herbicide you are working with to prevent problems

Prescribed Burning
Prescribed fire

- Low intensity burning
- Encourages growth of herbaceous and grassy vegetation.
- Provides nutrients to the soil
- Used to control hardwood competition in pine stands
- Also used in hardwood stands.

Fire in hardwood stands

- Used to encourage oak regeneration by reducing competition.
- Increases herb growth but can decrease vertical diversity in the short term.

Prescribed fire

- Timing is important
  - Late winter ad early spring are best for wildlife
  - Should be conducted with another forest harvest practice for best effect

Combining Practices

- Add fire to various regeneration cuts to stimulate vegetative growth
- Combine wildlife thinnings with fire to enhance their effects.
Shelterwood-Burn

- Cut, wait 3-5 years, then burn (Shelterwood-burn technique, Brose et al. 1999)
- Favors herbaceous plants and reduces oak competition

Wildlife Thinning and Burning
Wildlife Thinning and Burning

Multi-class Even-aged Management

- 2 or 3-aged stands
- Generally a shade tolerant lower age class under a fairly thin overstory of the same species

Snags
**Brush Piles**

- Herbicides or single-tree selection can be used to improve stand quality
- Maintain appropriate width to protect areas

**Riparian Zone**

- Plant native grass species in these ready-made food plots
- Provides a new level of habitat diversity

**Roads and Fire Breaks**

- Know the objectives!
- Know the species or group of species!
- Know the habitat resources in place!

**Remember…**

- Know the objectives!
Remember…..

• Know your options!
• Do your research!
• Hit the ground running and provide good forest management for wildlife!