Integrating Forest and Wildlife Management

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Management of Succession

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

Regenerate or Alter 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.

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 Options**

**Even-Aged Management**

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

**Habitat Succession**

- Short Successional Stage
- Middle Successional Stage
- Late Successional Stage

- Short-Lasting Species
- Middle-Lasting Species
- Long-Lasting Species

- Early-Lasting Species
- Middle-Lasting Species
- Late-Lasting Species
**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

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

**Wildlife and Shelterwoods**

- Can ensure successful regeneration of mast producing species
- Especially successful when combined with prescribed fire
What about plantations?

- Type of Site Prep is important
- Regeneration type?
- Spacing of Plantings is where the most impact for wildlife is found

Site Preparation

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

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>
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<tr>
<th>Spacing (ft)</th>
<th>Trees/Acre</th>
<th>Effects</th>
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<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>
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<tr>
<td>15 X 15</td>
<td>194</td>
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<tr>
<td>12 X 12</td>
<td>303</td>
<td>Lots of herbaceous plant cover, delayed and reduced crown closure. Great for wildlife, poor to fair for timber.</td>
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<tr>
<td>10 X 12</td>
<td>363</td>
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<tr>
<td>8 X 12</td>
<td>454</td>
<td>Good herbaceous plant production, delayed crown closure. A good compromise between timber and wildlife.</td>
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<tr>
<td>8 X 10</td>
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</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>
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<tr>
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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

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 Retention Cuts**

- Use herbicides to inject and kill undesirable trees
- Allows more light to the forest floor to encourage understory growth

**Wildlife Retention Cuts**

- No site disturbance
- Lots of snags created
- Can be used in conjunction with TSI

**Herbicides**

- 1 qt Garlon 3A
- 6 oz Arsenal AC
- 3 qts Water
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

Fire and Wildlife

Growing-season fire (Apr)
- reduces litter and woody understory
- stimulates herbaceous cover
- enhances visibility / brood habitat
- best adapted to drier sites
- longer rotation (4 – 5 years?)

Dormant-season fire (Jan – Mar)
- reduces litter
- high intensity kills woody under- / midstory
- if hot enough, thinning may not be necessary
- adapted to dry or relatively moist sites
- shorter rotation (3 years?)

Source: Craig Harper
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

Potential Problems

- Use relatively low-intensity fire
  - backfire
  - short strip-headfire
- Move slash from around trunk

Combining Practices

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

Source: Craig Harper
Shelterwood-Burn

- Cut, wait 3-5 years, then burn (Shelterwood-burn technique, Brose et al. 1999)
- Favors herbaceous plants and reduces oak competition
Wildlife Retention Cut – Cut Mar 2001
- Burned again Apr 2005

Source: Craig Harper

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

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

Don’t Do Fescue or Orchard Grass!

What to Plant on Old Logging Roads

- Clovers such as crimson, white, and subterranean (Ladino in some places)
- Annual cool season grasses (oats, wheat, annual ryegrass)
- NSWG not really suited for forest roads

Remember....

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

Remember....

- Know your options!
- Do your research!
- Hit the ground running and provide good forest management for wildlife!
• Alabama Wildlife Federation
  – http://www.alabamawildlife.org

• Growing and Managing Successful Food Plots for Wildlife in the Mid-South