Sustainable Forestry and Harvesting in Southwest Virginia

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How can America have the wood and paper products it needs today while protecting the environment and ensuring that future generations have the same abundant resources?
A PICTURE FROM CLINCH MOUNTAIN TAKEN IN 1927
THE SAME POINT ON CLINCH MOUNTAIN AS IT LOOKED IN 2000
DOWNHILL FROM THE SAME SPOT
Ecology
Succession

• Succession is the gradual process of one plant community replacing another over time

• Stand initiation

• Stem exclusion

• Understory re-initiation

• Complex
Shade-tolerance

Tolerance is the ability of a species to survive and grow under limited light conditions

• Tolerant
  – Eastern hemlock, dogwood, maples, beech

• Intolerant
  – Most pines, black locust, black cherry, yellow poplar, black walnut

• Intermediate
  – White pine, most oaks, white ash, hickories
Disturbance

- Large-scale
  - Set back succession to regeneration stage
  - Occur infrequently
  - Changes are drastic & immediate
- Stand-replacing
  - Hurricanes
  - Ice storms
  - Wildfires
  - Clear cuts
  - Insects/diseases
Disturbance

• Small-scale
  – Individual or small group mortality
    • Age, insects, disease, injury
  – Gap creation
    • Increase in sunlight (temporary?)
    • Increase in soil moisture (temporary?)
    • Temperature
    • Wind/snow patterns
  – Intolerant pioneer species fill in
Forest Structure

- Understory
- Midstory
- Overstory
  - Crown class
Forest Structure
Forest Structure/Composition

- Even-aged
- Uneven-aged
- Two-aged
- Pure
- Mixed-species
Ecology

Forest structure and composition are complex and ever-changing
Management

• Silviculture
  – Art & science of managing a stand of trees to meet specific management objective
  – Includes harvesting, regeneration, and all intermediate treatments (thinning, TSI, etc.)
  – Valid silvicultural systems plan for the future health and productivity of the stand
Management

Valid silvicultural systems include:

• Shelterwood (and irregular shelterwood)
• Seedtree
• Clearcut
• Selection (group & single tree)
• A select(ive) cut is NOT a valid silvicultural system – it is high-grading!

Visual Guide to Timber Harvesting

• www.forestandrange.org
Shelterwood & Seedtree

- Even-aged
- Prep cut, establishment cut, removal cut
- Preserves seed source until adequate regeneration est.
- These trees continue to grow
- Shelterwood also provides shelter for seedlings
- Tolerant/moderately tolerant species
Silvicultural Clearcut

- Even-aged
- Remove all overstory trees (including non-commercial stems)
- Advanced regeneration (natural) or plant seedlings or seed (artificial)
- Shade intolerant species (loblolly pine)
Selection

• Single tree and group selection
• Remove the WORST and leave the BEST
• Natural or artificial regeneration in openings
• Shade tolerant/intermediately tolerant/intolerant
• Uneven-aged
Intermediate Operations

- Intensive versus extensive
- Competition control
- Fertilization
- Timber stand improvement/thinning
- Crop tree release
- Prescribed fire
- Do nothing
Harvesting Systems
Animal Logging

- Less than 20% slope
- Small piece size
- Size, weight, & number of animals dictate payload capacity
- Short skidding distances
Skidder logging
Cable Logging