Common Silvicultural Practices in the Boreal Hardwood Transition

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Definition of Silviculture:
The practice of controlling forest composition, structure, and growth to maintain and enhance the forest’s utility for any purpose.
Definition of Silvicultural System:

A planned program of vegetation treatment during the entire life of a stand.

- Typically named after the stand age class structure and the regeneration method (e.g., even-aged uniform shelterwood system)
- Three components: tending, harvesting, and regeneration
INTERMEDIATE TREATMENT

Silvicultural treatment occurring after the establishment of regeneration and prior to final harvest.

• sometimes called tending or timber stand improvement

• designed to improve composition, structure, growth, health, quality, and production

• commercial or non-commercial
Method by which a stand of trees is established by natural reproduction.

- based on mode of origin and arrangement of cuttings in time & space
- examples – simple coppice, uniform shelterwood
Forest Type Groups of BCR-12

Timberland area, BCR12, 2015

Acres (millions)
Aspen (aspen/birch group)

Intermediate Treatments:
- thinning uncommon

Regeneration Methods:
- even-aged systems
- simple coppice
- coppice with standards (or reserves)
- natural conversion
simple coppice
coppice
w/ standards
coppice w/ aggregate retention
Intermediate Treatments:
  • thinning uncommon, risk of root damage

Regeneration Methods:
  • even-aged systems
  • shelterwood
  • seed tree
  • clearcut (w/standards, strip)
  • scarification (mechanical, Rx fire)
seed tree w/ scarification
Northern Hardwoods
(maple/beech/birch group)

Intermediate Treatments:
• thinning common
• thinning combined with regeneration in uneven-aged systems

Regeneration Methods:
• even-aged & uneven-aged systems
• single tree selection
• group selection
• shelterwood
• overstory removal
• multi-cohort
How does WDNR define a gap, group, or patch?

**Patch**: .5 – 2.0 acres
Although stands are considered uneven-aged, the relatively large openings are fairly exposed and function as small even-aged patches.

**Group**: .1 – .5 acres
The smallest canopy openings are 0.1 acres, equivalent to a 75 foot diameter circular opening. The largest canopy openings are 0.5 acres, equivalent to a 167 foot diameter circular opening, which is approximately 2X tree height.

**Gap**: <.1 acres
Each regeneration opening (canopy gap) covers an area equivalent to the crown spread of a one to several large trees.
single tree selection
group selection
multi-cohort
Spruce/Fir

Intermediate Treatments:
- thinning common

Regeneration Methods:
- mostly even-aged, sometimes uneven-aged systems
- shelterwood
- clearcut (uniform, strip)
- overstory removal
- seed tree
- less common - single tree & group selection
- artificial - direct seeding
strip clearcut
White/Red/Jack Pine Group

Intermediate Treatments:
• thinning common in white and red pine

Regeneration Methods:
• mostly even-aged, sometimes uneven-aged systems
• **white pine** – shelterwood, seed tree, overstory removal, some group/patch selection
• **red pine** – shelterwood, overstory removal, artificial regeneration (most common)
• **jack pine** – clearcut, seed tree
• scarification (mechanical, Rx fire)
overstory removal (potential)
artificial regeneration
seed tree w/ Rx fire
Oak/Hickory Group

Intermediate Treatments:

• thinning common

Regeneration Methods:

• even-aged systems
• shelterwood
• coppice
• overstory removal
• patch selection
• scarification (mechanical, Rx fire)
Coppice w/ reserves
Bottomland/Swamp Hardwoods (elm/ash/cottonwood group)

Intermediate Treatments:
• thinning common, combined with regeneration in uneven-aged systems

Regeneration Methods:
• even-aged & uneven-aged systems
• shelterwood
• seed tree
• coppice
• overstory removal
• group & patch selection
• hydrology issues critical
intermediate thinning
strip shelterwood
Tree Retention

• emulate natural disturbance patterns (i.e., biological legacies)
• alter structure within a silvicultural system
• most states have developed tree retention guidelines