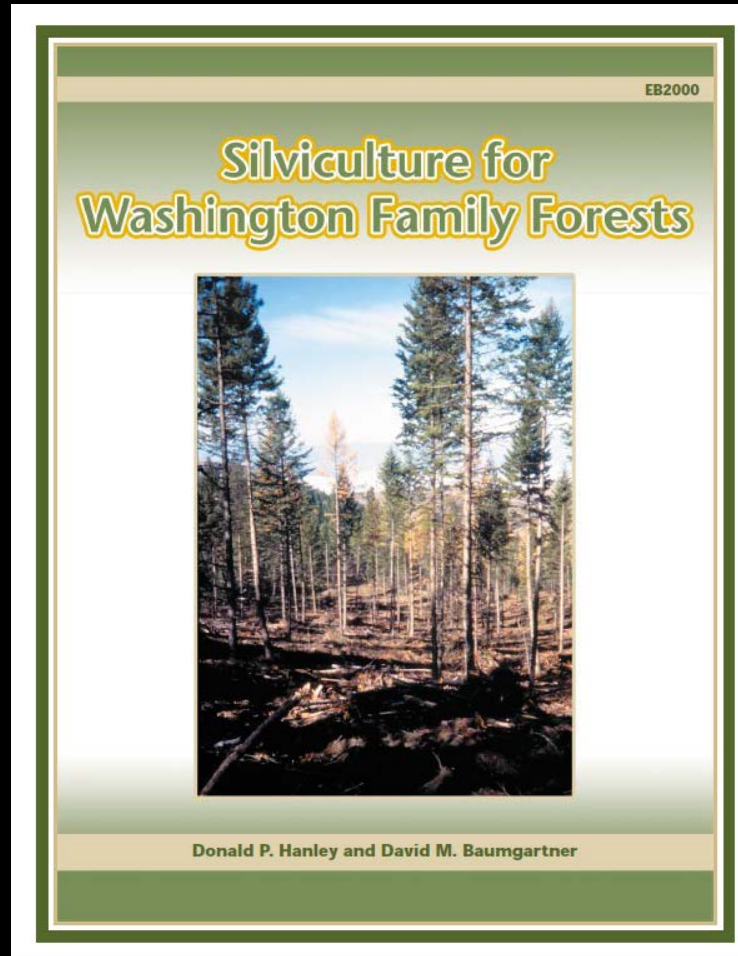




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# Forest Management Options





# PNW Westside Forests

- Very Young (~0-30 yrs)
- Young (~30-60 yrs)
- Maturing (~60+ yrs)







## Management Objectives

- A healthy forest
- Periodic income
- Wildlife
- Privacy
- Aesthetics
- Recreation
- Stewardship
- Long-term investment







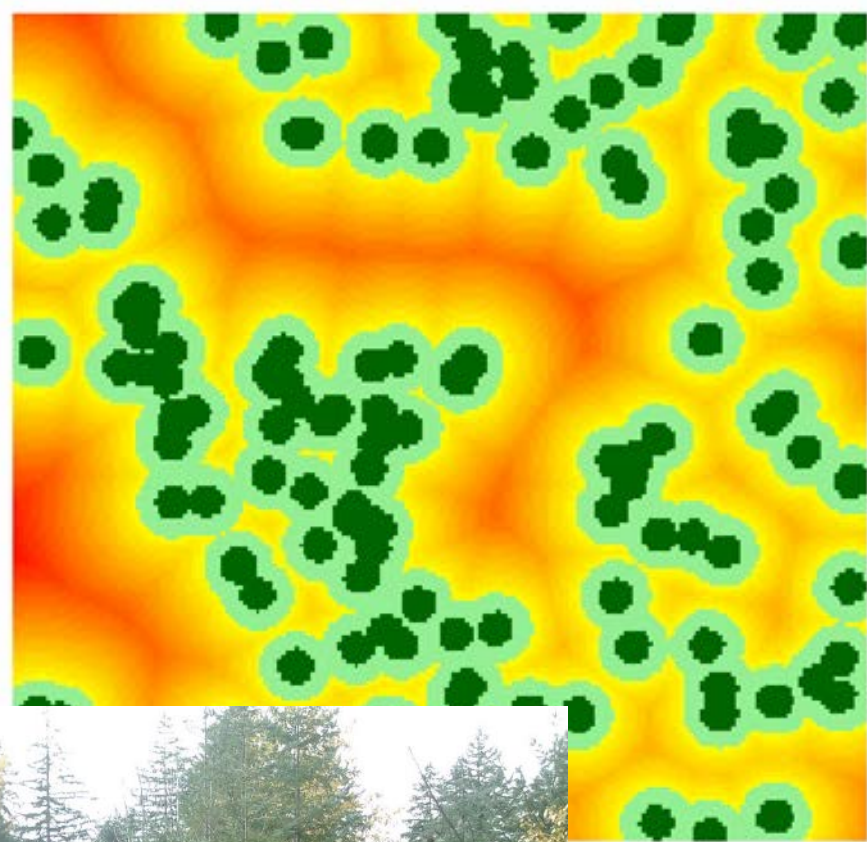
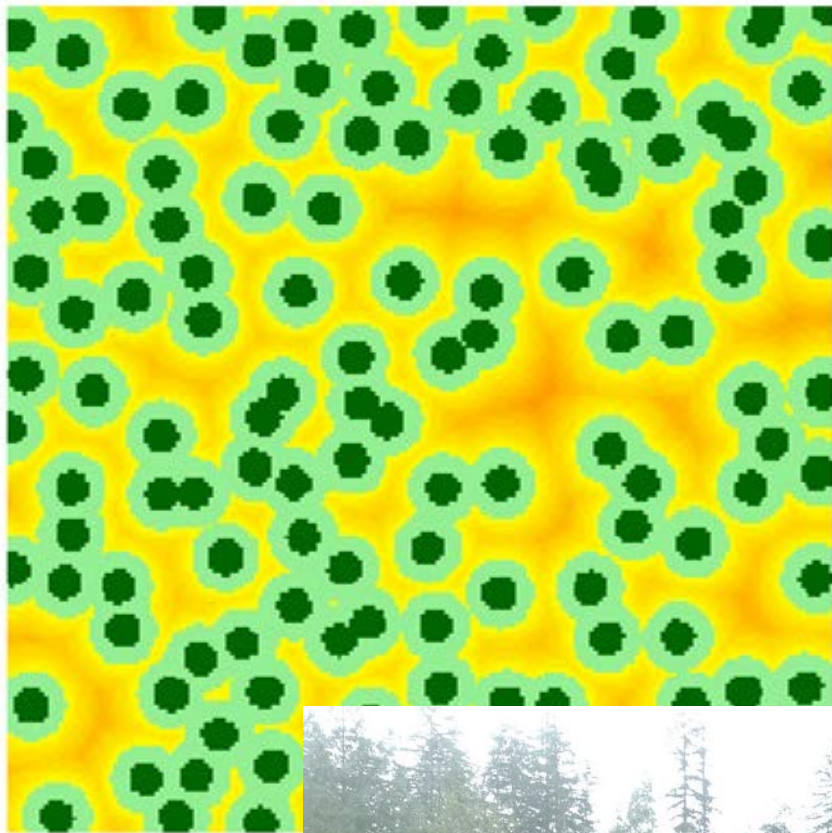
# FOREST ASSESSMENT

## 0-30 YEARS



**Access**  
**Habitat**  
**Wildlife use**  
**Stocking**  
**Brush comp.**  
**Browse**  
**Invasive spp.**







































# Management Actions

## 0-30 years

1. Replant large gaps
2. Cut back competing vegetation
3. Cage seedlings
4. Remove invasive species
5. Install bird nesting boxes
6. Inspect and repair forest access roads
7. Pre-commercially thin alder thickets
8. Pre-commercially thin to favor crop trees
9. Monitor!

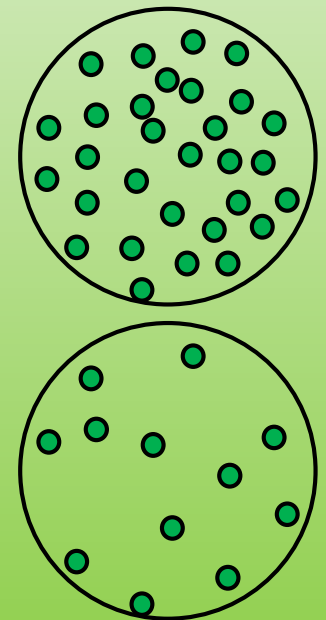


# Pre-Commercial Thinning Strategies

Thinning “from below”

Remove:

1. Smallest diameter
2. Most suppressed
3. Trees with least live crown (<30%)
4. Defective trees (broken tops, wane, forked, etc.)
5. Non-preferred species
6. Spacing
7. “Release” understory trees

















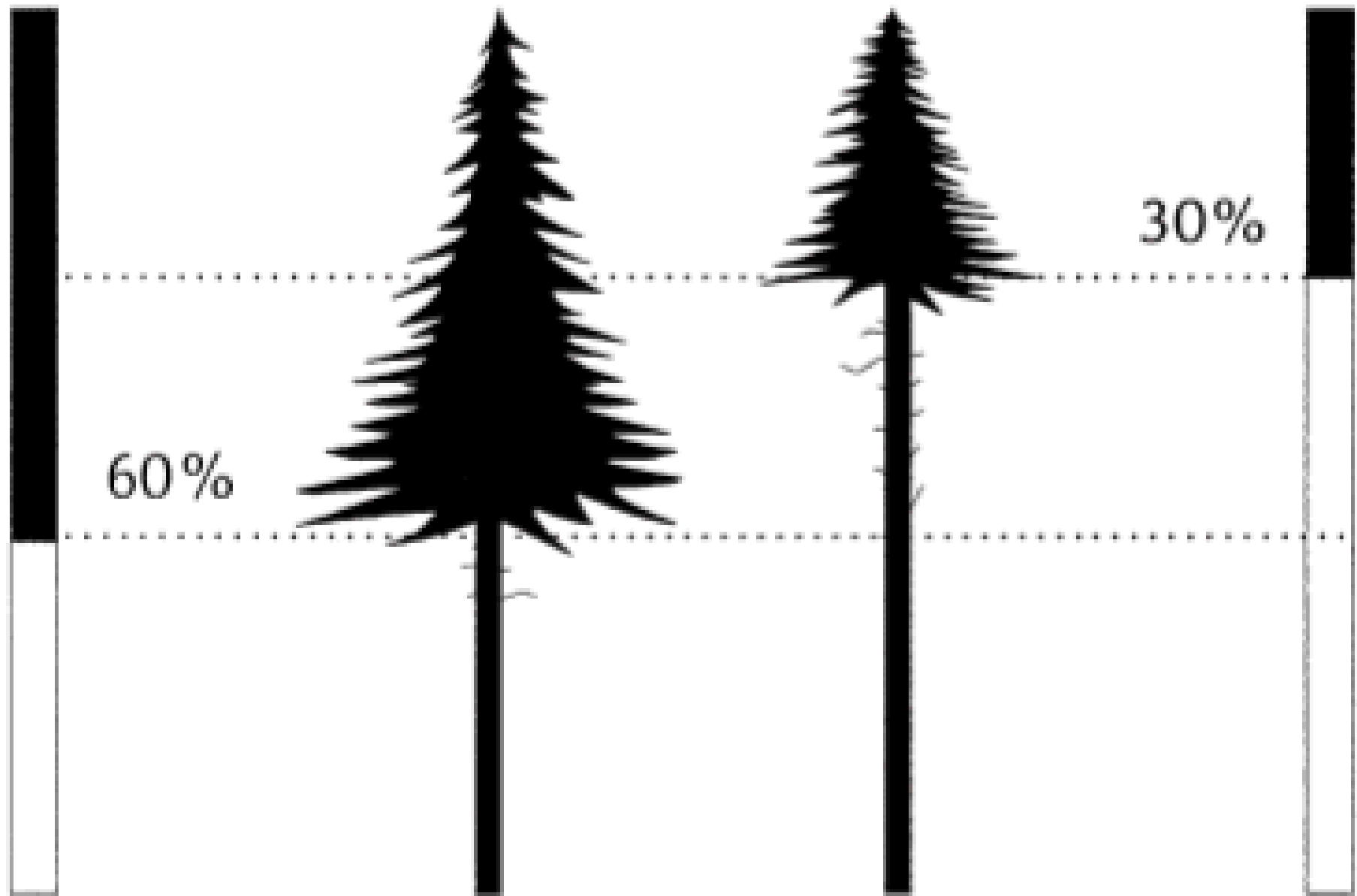
# FOREST ASSESSMENT

30 - 60 YEARS



**Stocking**  
**Crown ratio**  
**Health**  
**Habitat**  
**Merchantability?**





**Figure 3-2. Live-crown ratio of a tree.**



























# Continuous Cover Forestry

## Managing Multi- Cohort Stands

### Thinning

Reduce density of a cohort to maintain or improve growth and crown development

### Remove Overstory

Harvest trees for wood & revenue; and open growing space space for lower cohorts

### Regeneration

Establish a new cohort

## Approaches

- Individual Tree Selection
- Group Selection
- Thin from below
- Free thinning
- Variable density thinning
- Variable retention



# Cutting Cycle

Stand Volume

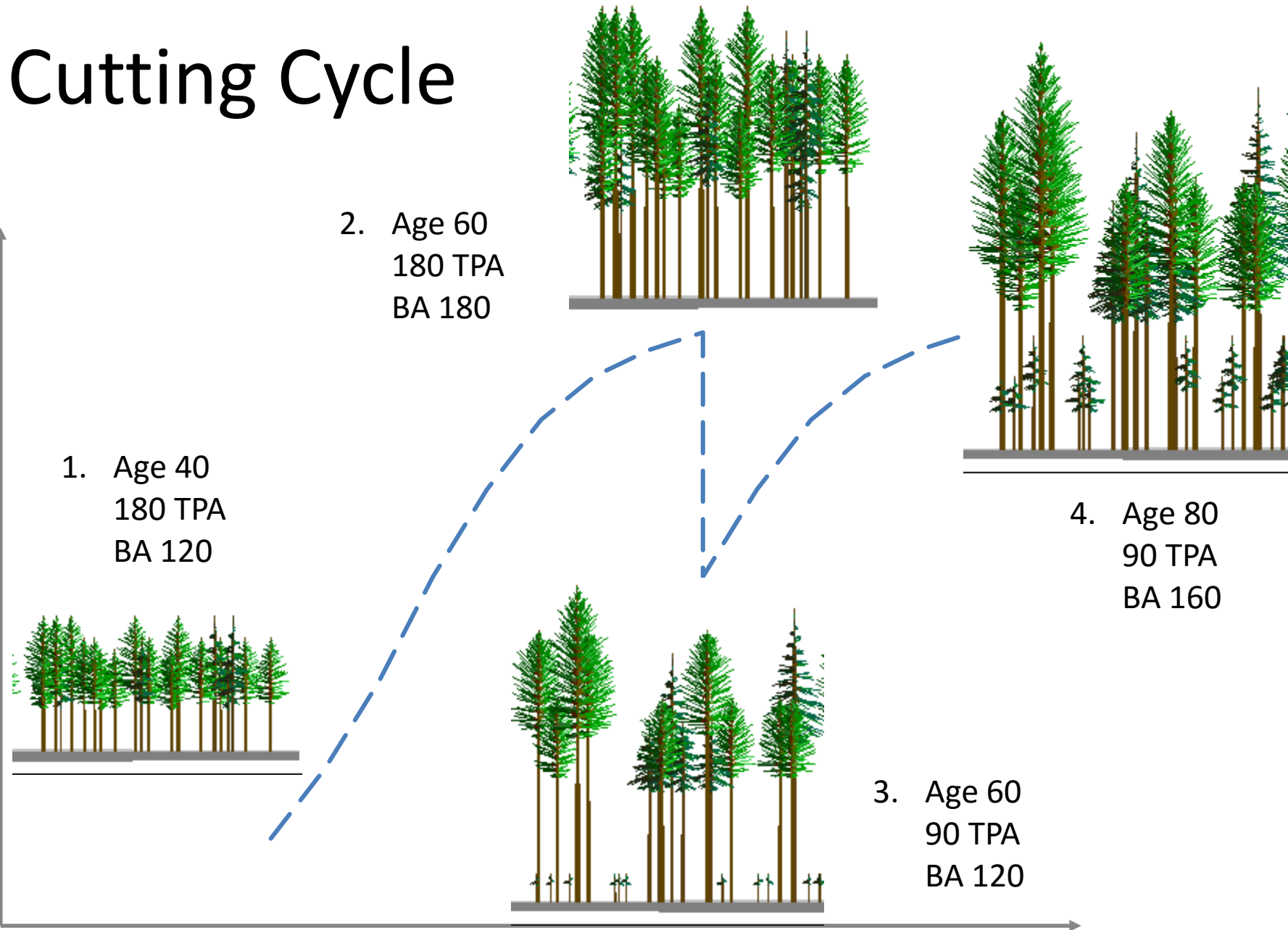
1. Age 40  
180 TPA  
BA 120

2. Age 60  
180 TPA  
BA 180

3. Age 60  
90 TPA  
BA 120

4. Age 80  
90 TPA  
BA 160

Stand Age



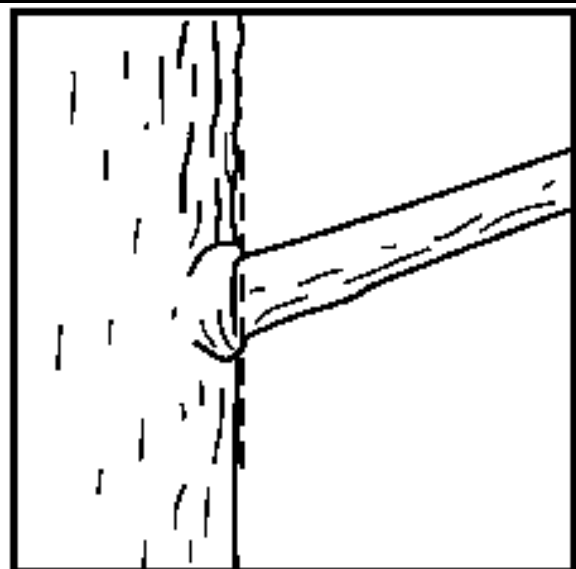
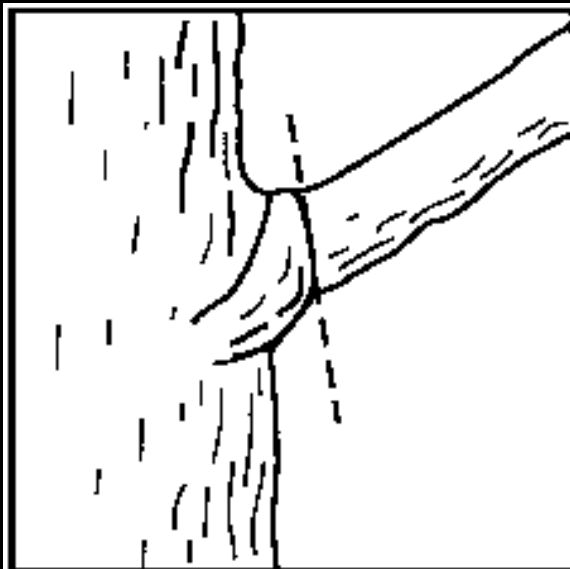














# Management Actions

30-60 years

1. 1<sup>st</sup> & 2<sup>nd</sup> commercial thinning
2. Replant understocked areas, disease gaps, hardwood patches
3. Underplant following commercial thinning
4. Create habitat structures
  - a. Downed logs
  - b. Habitat piles
5. Remove invasive species
6. Pruning
7. Monitor!



# FOREST ASSESSMENT

**60+ YEARS**



**Stocking**  
**Crown ratio**  
**Height-to-diameter**  
**Spp. composition**  
**Understory**  
**Habitat**  
**Merchantability**  
**Disease**











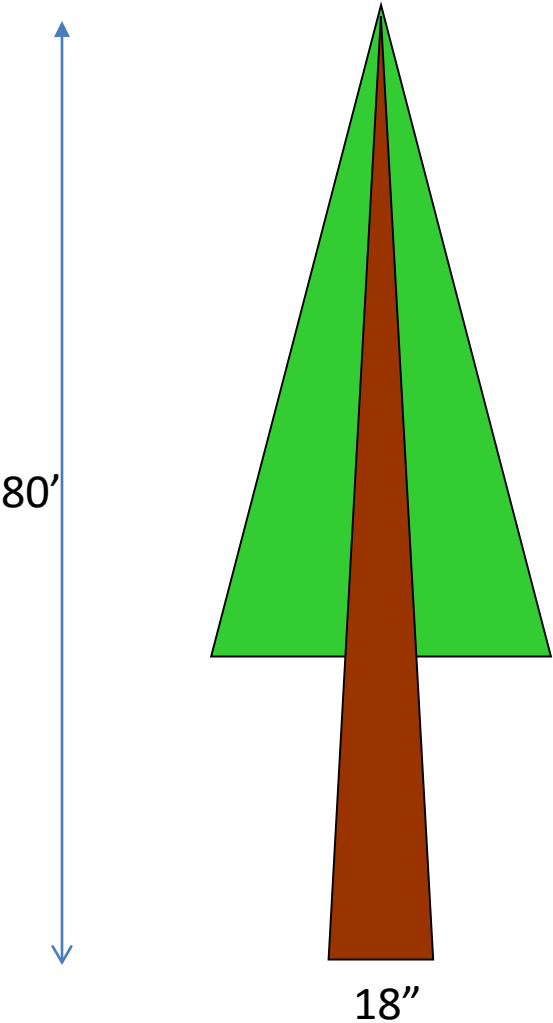




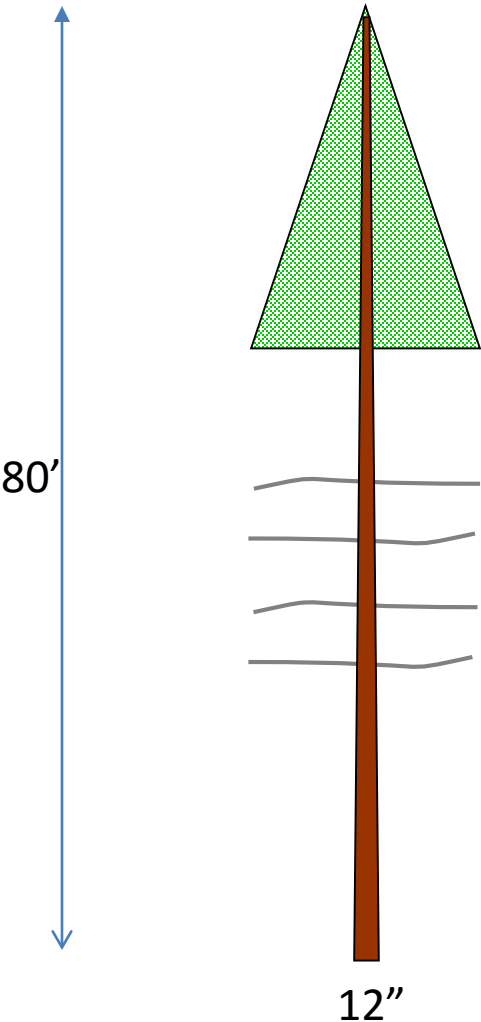
# Measuring Height to Diameter Ratio

Height (Feet)

Diameter: DBH (Feet)



$$\frac{80 \text{ (feet)}}{18'' \text{ dbh}} = \frac{80'}{1.5'} = 53$$

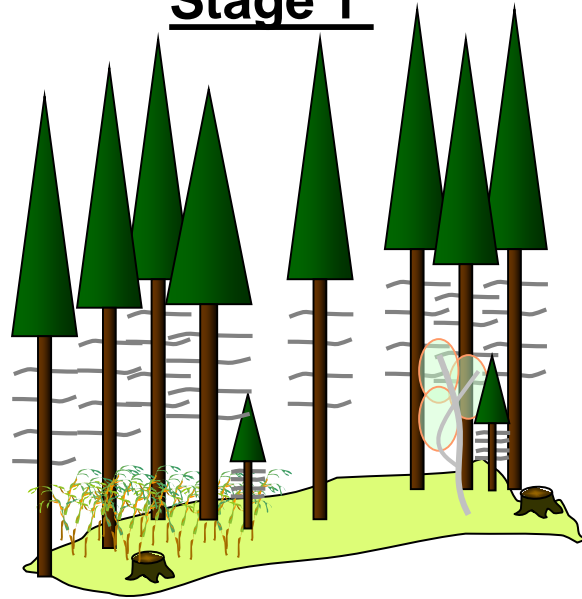


$$\frac{80'}{12''} = \frac{80'}{1'} = 80$$



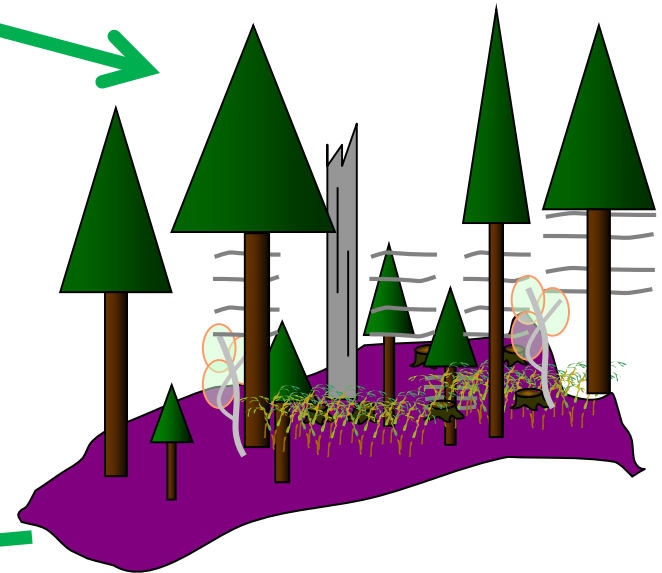
## Stage 1

No Mngt or past  
Commercial Thin  
1. Thin Overstory  
2. Establish understory

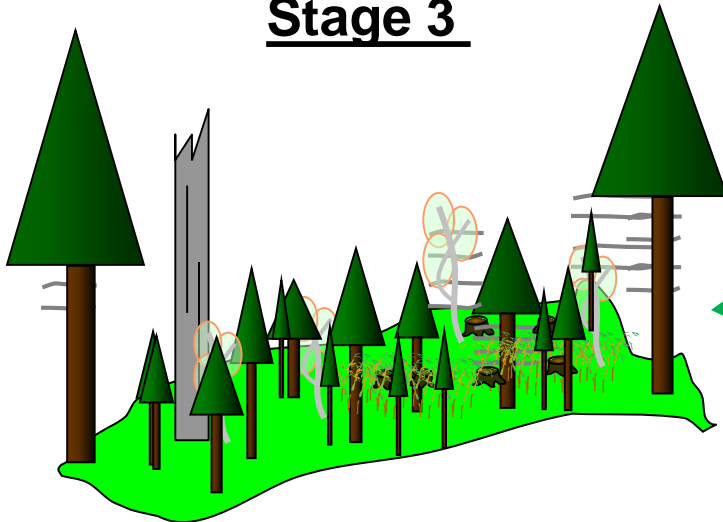


ITS w small gaps or VDT  
1. Maintain release  
potential of understory  
2. Harvest portion of  
overstory

## Stage 2



## Stage 3

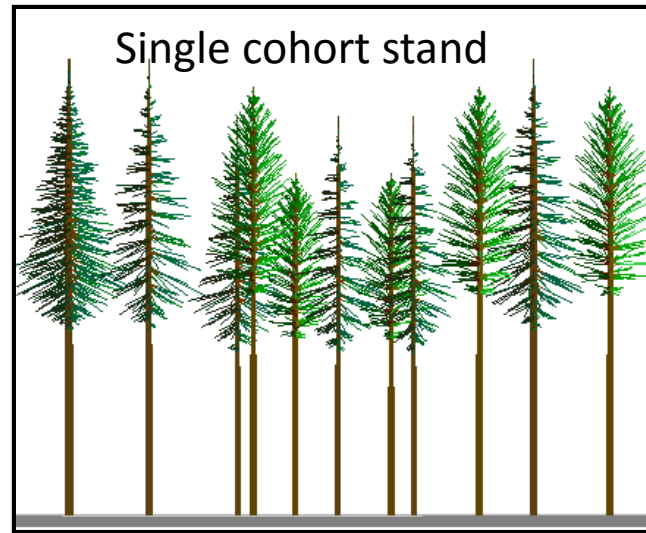


Group Selection  
1. Harvest most of overstory  
2. Release understory



# Understory Establishment – Initiation of Two-cohort Stand

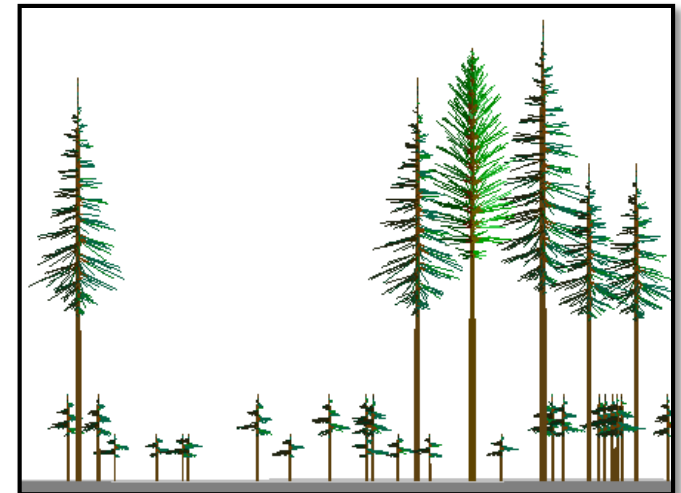
dispersed



grouped



Transformation  
to two-cohort  
stand

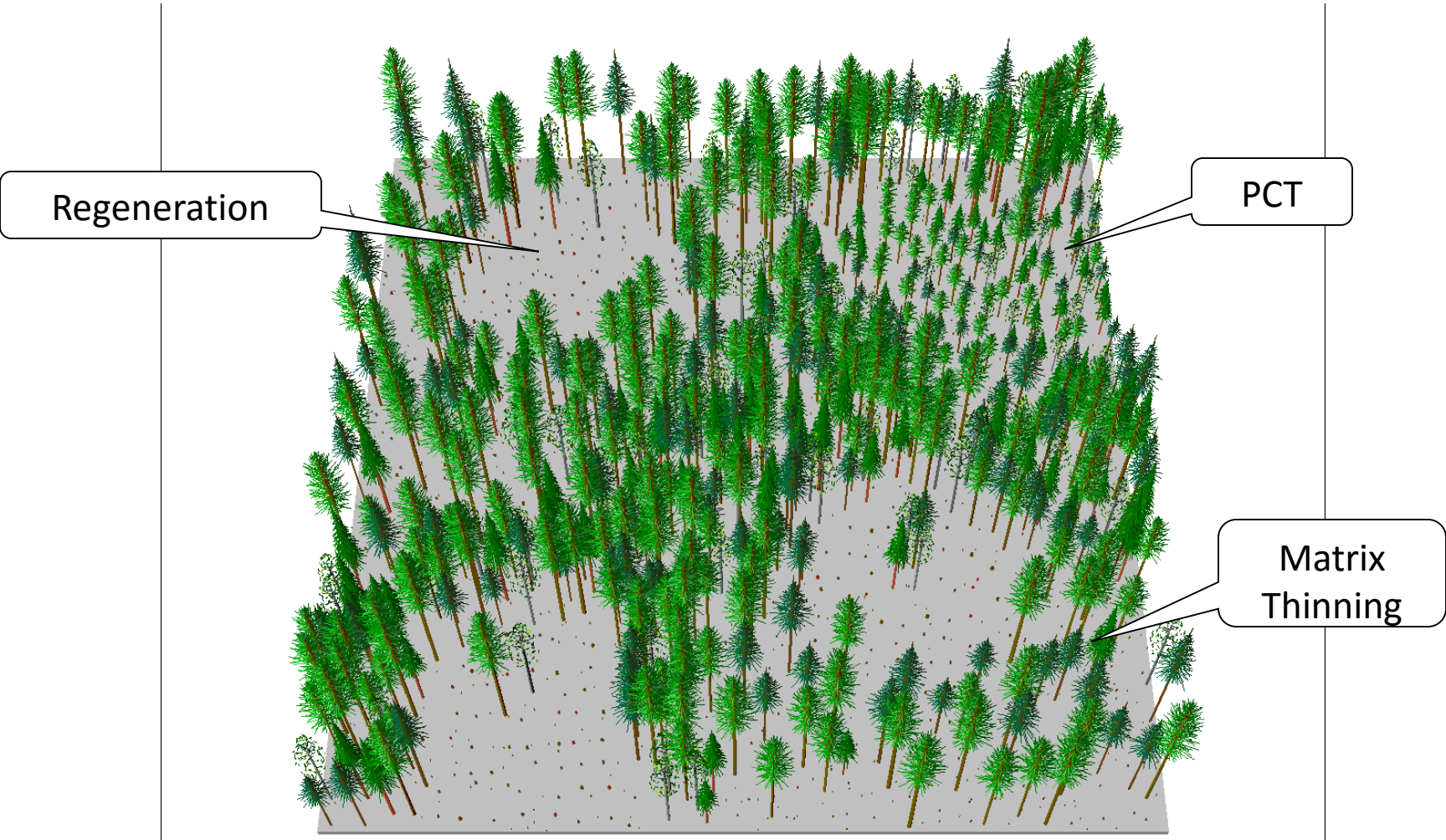








# Group Selection Structure Types













# Environmental Quality Incentives Program (EQIP)

## Timber Stand Improvement

- Pre-commercial thinning
- Inter/Under-planting
- Pruning
- Increasing species diversity
- Root rot mitigation
- Remove invasives
- Stand release
- Forest slash treatment
- Reforestation





# Environmental Quality Incentives Program (EQIP)

## Wildlife Habitat Enhancement

- Planting fruit & nut trees/shrubs
- Bird boxes
- Snags and downed logs
- Habitat piles
- Increasing tree/shrub diversity
- Elk forage
- Streamside planting





# EQIP Scenario #1

0-15 years

1. Forest management plan: \$1,300
2. Pre-commercial thinning: \$180/acre
3. Replant gaps
  1. Site prep: \$225/acre
  2. Planting conifers: \$0.90
  3. Tree cages: \$1.48
  4. Post-plant weed control: \$0.45
4. Seedling release: \$135.50/acre
5. Replant margins with wildlife trees/shrubs
  1. Site prep: \$225/acre
  2. Planting bareroot trees/shrubs: \$2.07
6. Invasive species control & replant
  1. Hand slash invasives: \$225/acre
  2. Site prep for planting: \$135/acre





# EQIP Scenario #2

15 – 30 years

1. Forest management plan: \$1,300
2. Habitat piles & downed logs: \$90
3. Snags: \$90
4. Bird boxes: \$45
5. Species diversification:
  1. Site prep: \$225/acre
  2. Planting conifers: \$0.90
  3. Planting hardwoods: \$2.07
  4. Tree cages: \$1.48
  5. Post-plant weed control: \$0.45
6. Pruning: \$112.50







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