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Assessing Forest Resources & Silvicultural Systems



Management Objectives

- A healthy forest
- Keep forest, not clearcut
- Wildlife
- Stewardship
- Long-term investment
- Legacy
- Periodic income
- Privacy
- Aesthetics
- Recreation



Black Diamond, WA



Sultan, WA

Commercial Harvest



Precommercial Harvest



Just let it grow until it's bigger?



Bigleaf maple



Assistance



Natural Resources Conservation Service (NRCS)
Soil and Water Conservation District (SWCD)
Oregon Department of Forestry (ODF)

Assistance

- Thinning
- Slash Treatment
- Invasive Species Man
- Planting (diversity)
- Seeding



Invasive Weeds



English holly



English or Irish ivy

Thinning to add diversity



Thinning to add diversity



Timing the early thin



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. Prune
10. Monitor!

FOREST ASSESSMENT

30 - 60 YEARS



McKenna, WA

Stocking
Crown ratio
Health
Habitat
Merchantability?

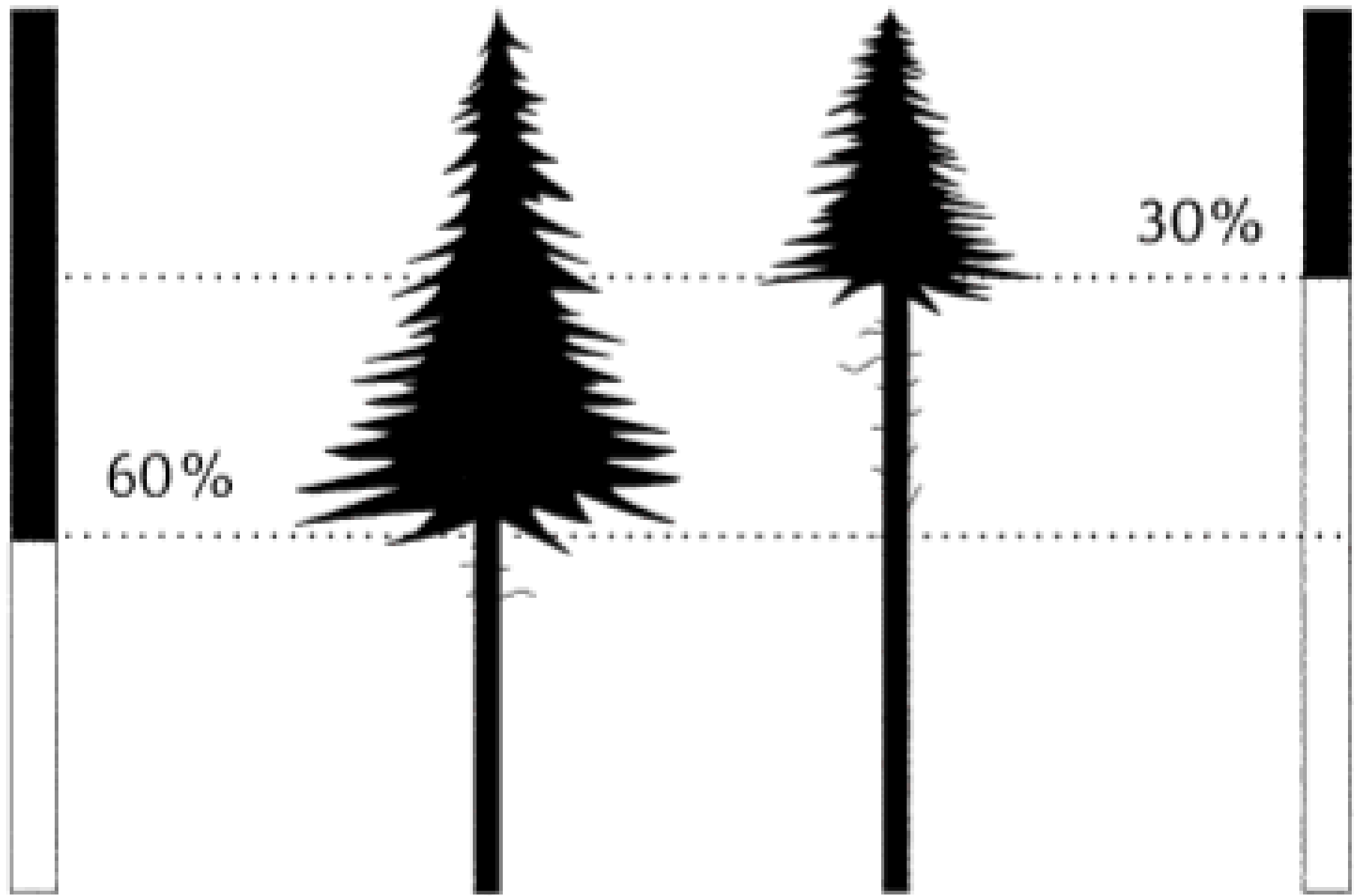


Figure 3-2. Live-crown ratio of a tree.







Black Diamond, WA



Black Diamond, WA



Black Diamond, WA



McKenna, WA

Continuous Cover Forestry

Managing Multi- Cohort Stands

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graph LR; A[Managing Multi-Cohort Stands] --> B[Thinning]; A --> C[Remove Overstory]; A --> D[Regeneration];
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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
- Variable density thinning
- Variable retention harvesting

Cutting Cycle

Stand Volume

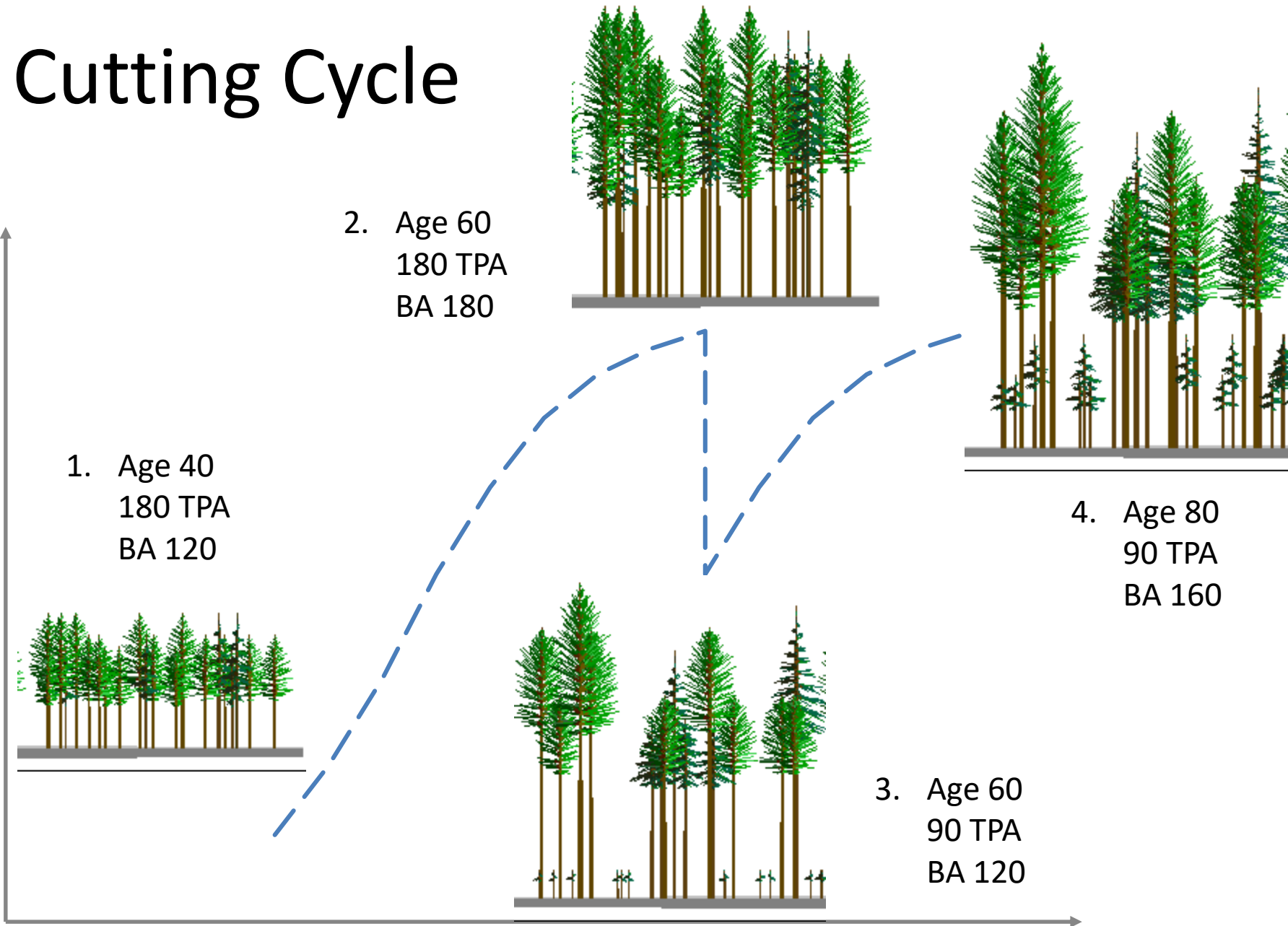
1. Age 40
180 TPA
BA 120

2. Age 60
180 TPA
BA 180

3. Age 60
90 TPA
BA 120

4. Age 80
90 TPA
BA 160

Stand Age







Black Diamond, WA

Management Actions

30-60 years

1. 1st & 2nd commercial thinning
 - a. Thinning from below
 - b. Variable density thinning
 - c. Gap creation in disease and/or hardwood patches
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. Be prepared for salvage logging
7. Monitor!

FOREST ASSESSMENT

60+ YEARS



Tenino, WA

Stocking
Crown ratio
Height-to-diameter
Spp. composition
Regeneration
Habitat
Merchantability
Disease
Incremental growth



Orcas Island, WA



Oakville, WA



Oakville, WA



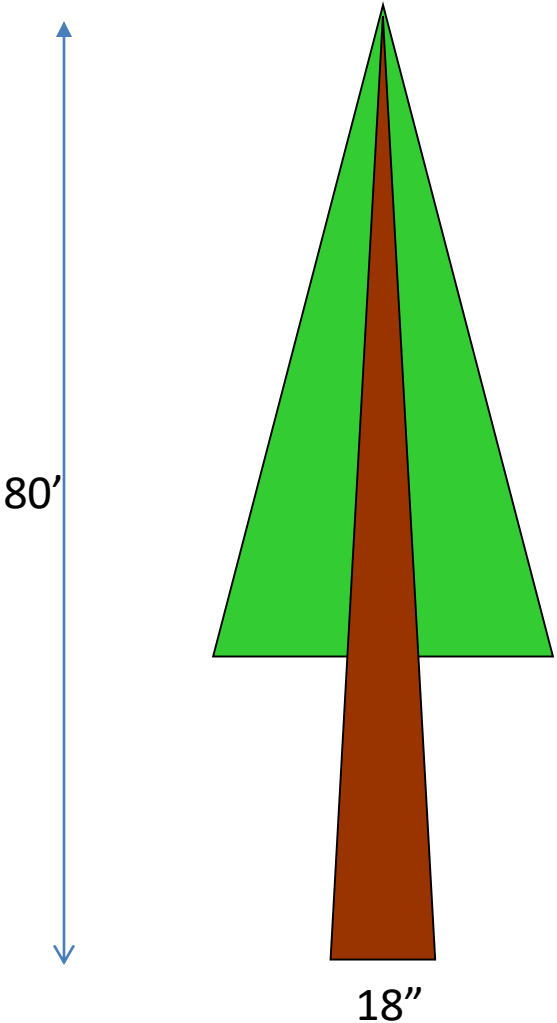
Shelton, WA

Self-thinning

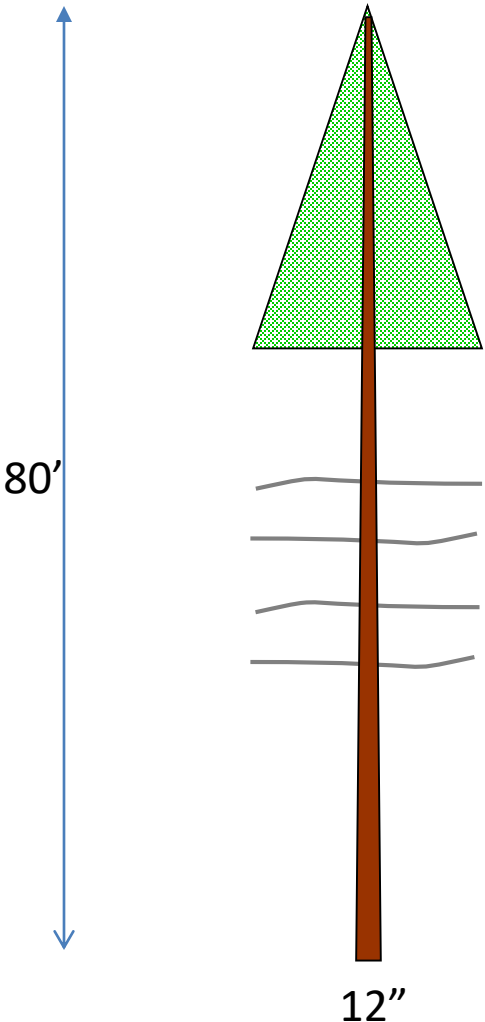
Measuring Height to Diameter Ratio

Height (Feet)

Diameter: DBH (Feet)



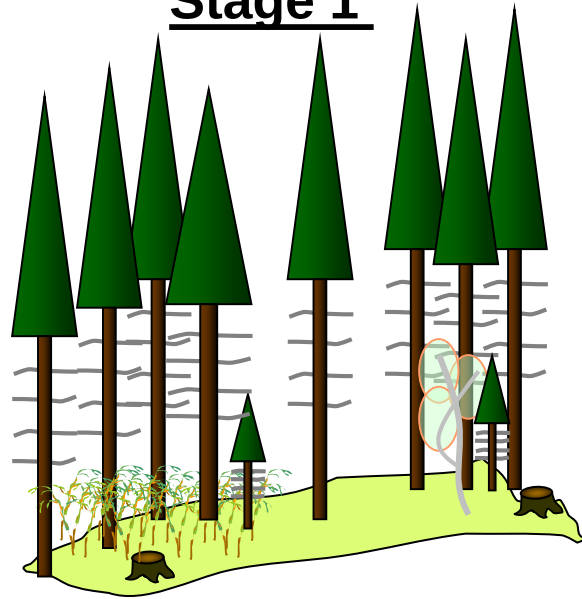
$$\frac{80 \text{ (feet)}}{18'' \text{ dbh}} = \frac{80'}{1.5'} = 53$$



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

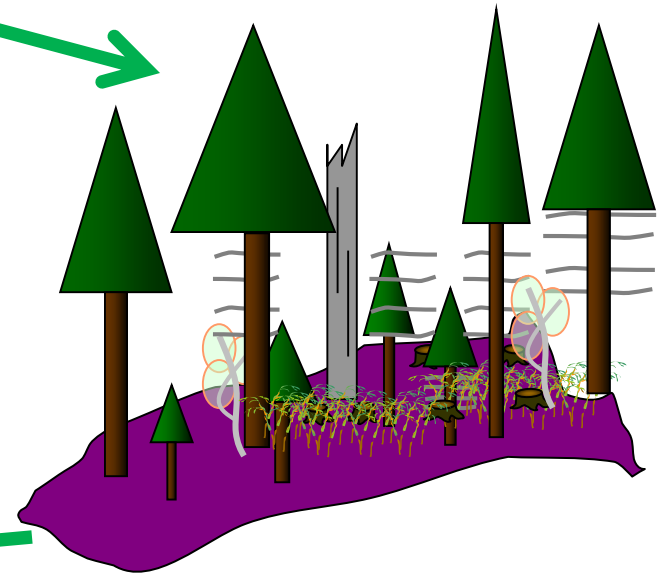
Stage 1

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

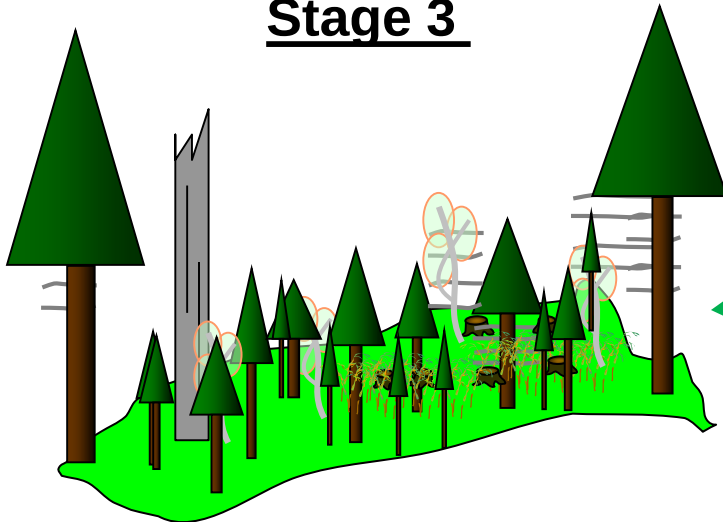


ITS w small gaps or VDT
1. Harvest portion of overstory
2. Release understory

Stage 2



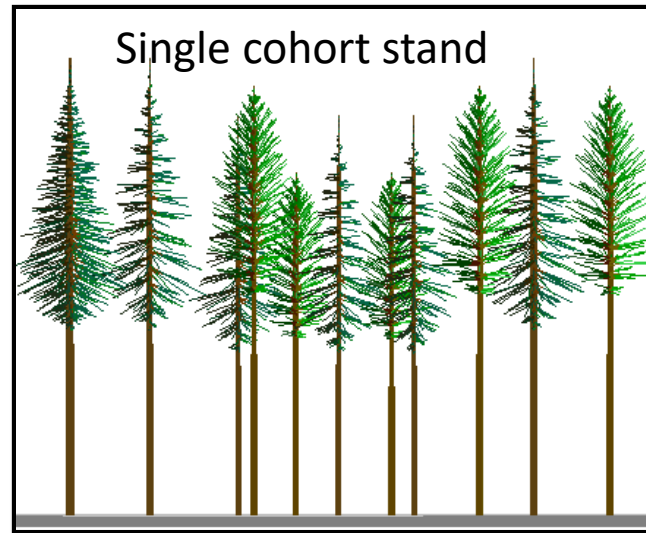
Stage 3



Group Selection
1. Harvest most of overstory
2. Release 2nd cohort

Understory Establishment – Initiation of Two-cohort Stand

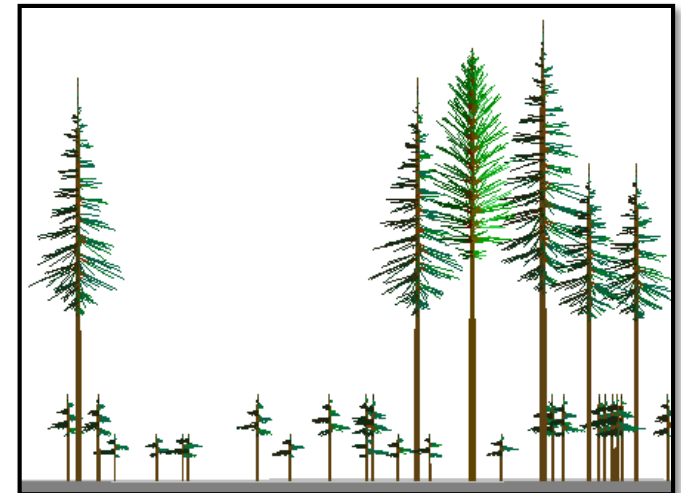
dispersed



grouped



Transformation
to two-cohort
stand



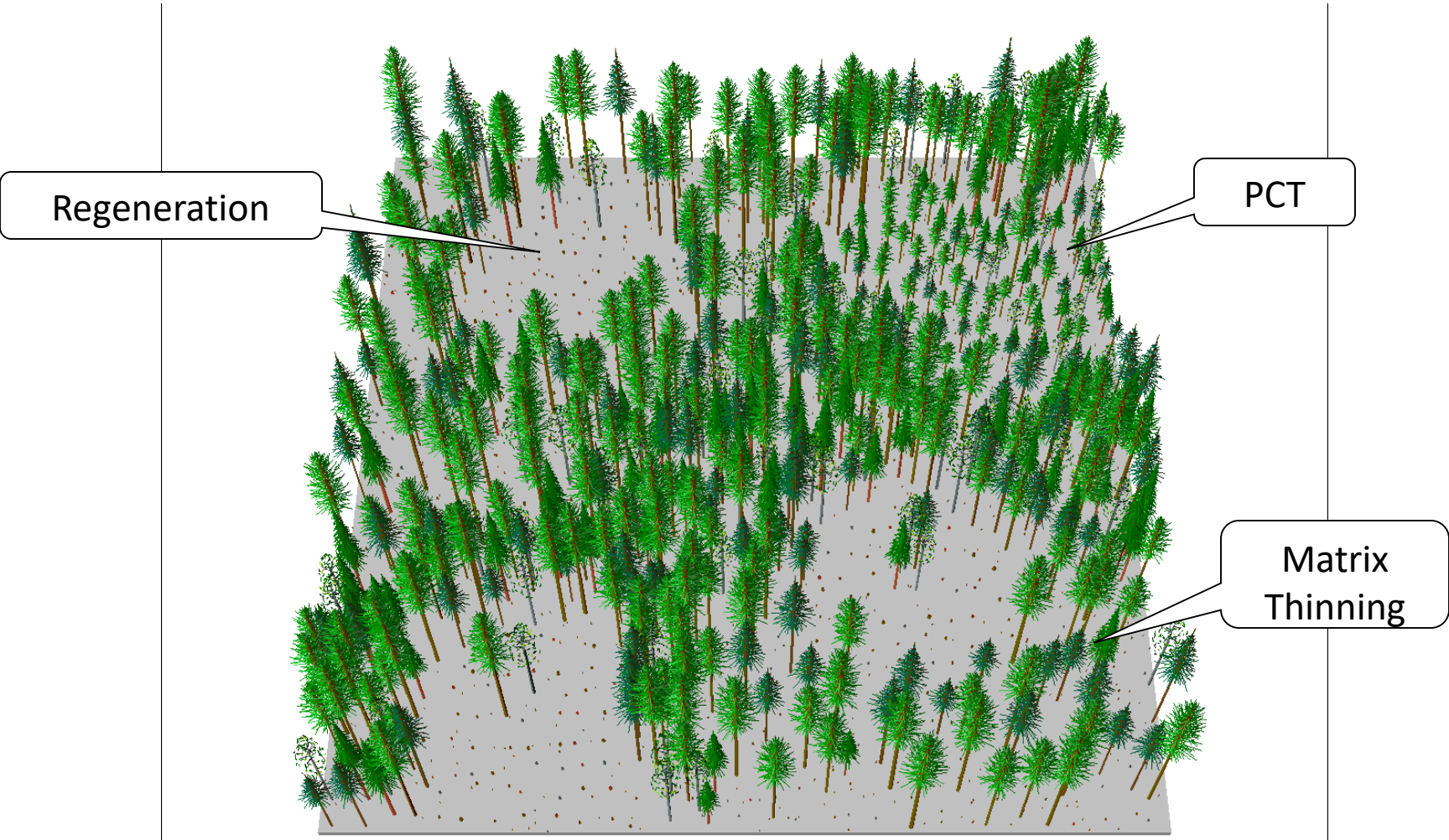


North Bend, WA



North Bend, WA

Group Selection Structure Types





Onalaska, WA



Vashon Island, WA



Capitol Forest, WA



Capitol Forest, WA



Fort Lewis, WA



Bucoda, WA



Bucoda, WA



North Bend, WA

Management Actions

60+ years

- 1. 3rd & 4th commercial thinning**
 - a. 2nd variable density thinning**
 - b. Variable retention harvest**
 - c. Gap creation**
- 2. Be prepared for salvage logging**
- 3. Evaluate advanced regeneration and replant to improve stocking and/or species composition.**
- 4. Replant disease gaps and hardwood patches**
- 5. Create habitat structures**
 - a. Distribute non-merchantable logs**
 - b. Habitat piles**
 - c. Retain/create snags**
- 6. Remove invasive species**
- 7. Monitor!**



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