

A photograph of a dense forest of tall evergreen trees, likely spruce or fir, with a person visible in the distance. The text is overlaid on the right side of the image.

Retention Measurement & Reporting in RESULTS

Module 1

Live Course 2015

Dave Weaver RPB

Retention Training Design

-to be posted on Silv. Surveys Website-

Module 1

Measurement and Reporting Retention into RESULTS



Audience: Approvers;
Administrators & Surveyors for
Context

Objective:

To provide an understanding of the connection between resultant Complex Stand Structures, Retention Assessment in the field and the reporting of Retention into RESULTS

Module 2

Retention Survey Techniques and Methodologies

Audience: Experienced Surveyors

Objective:

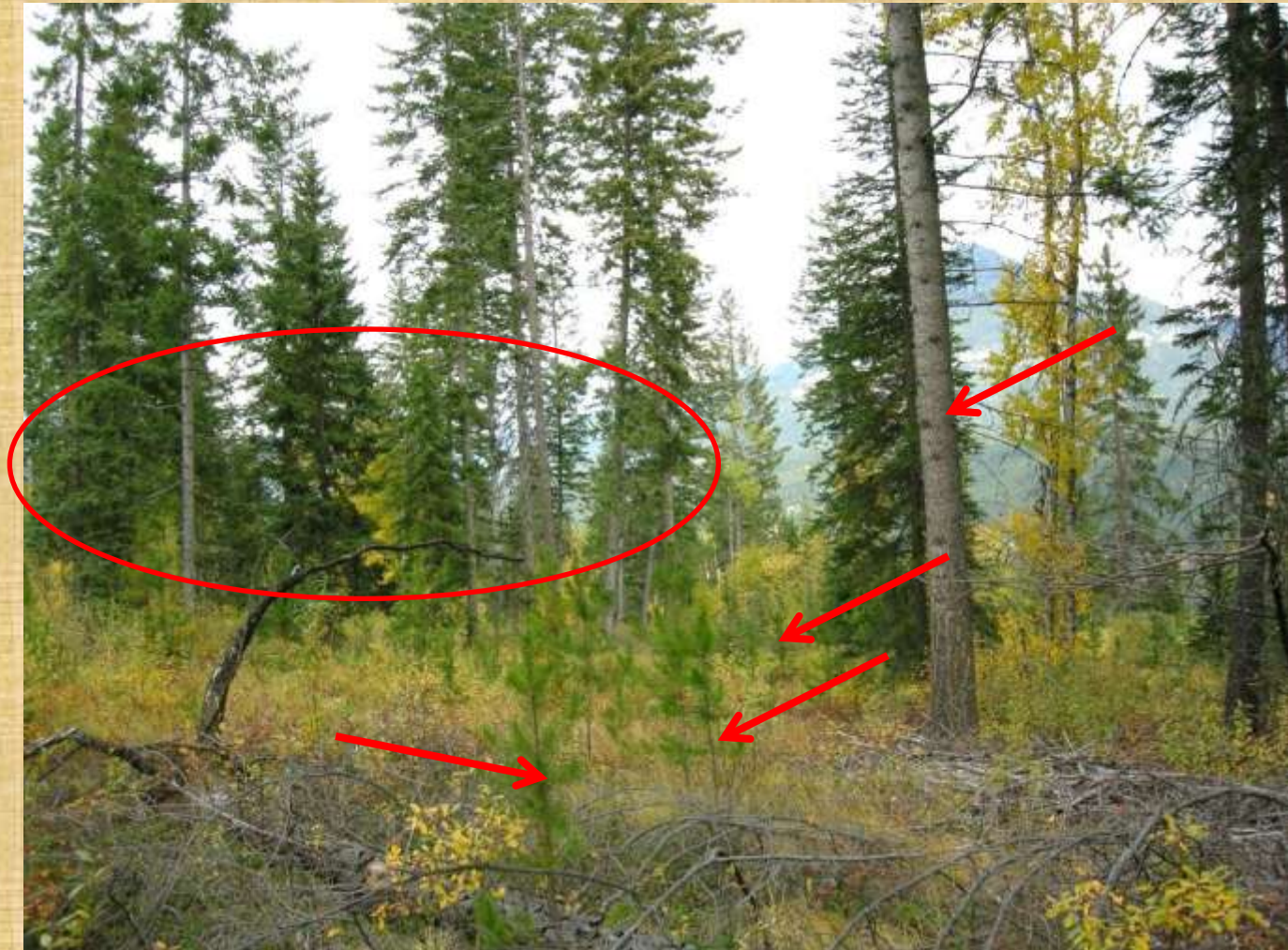
To demonstrate all aspects of Complex Surveys – *with Virtual Plot Slides*


- 1) Multi-storeyed
- 2) Layered
- 3) Deviation from Potential
- 4) Single Entry Dispersed Retention

Module 1 - Agenda - Measuring and Reporting Retention into RESULTS

- 1) Walk through the beginning of the Treed Retention Reporting Document
 - Scope, Intro, *What Does 5 m2 Look Like?* - one by one examples, Terms,
- 2) Demo and Use Retention Reporting Matrix
 - Common Uses and Case Study Examples

Dispersed Retention can have a large amounts of complexity, variability and overwhelming structure.....



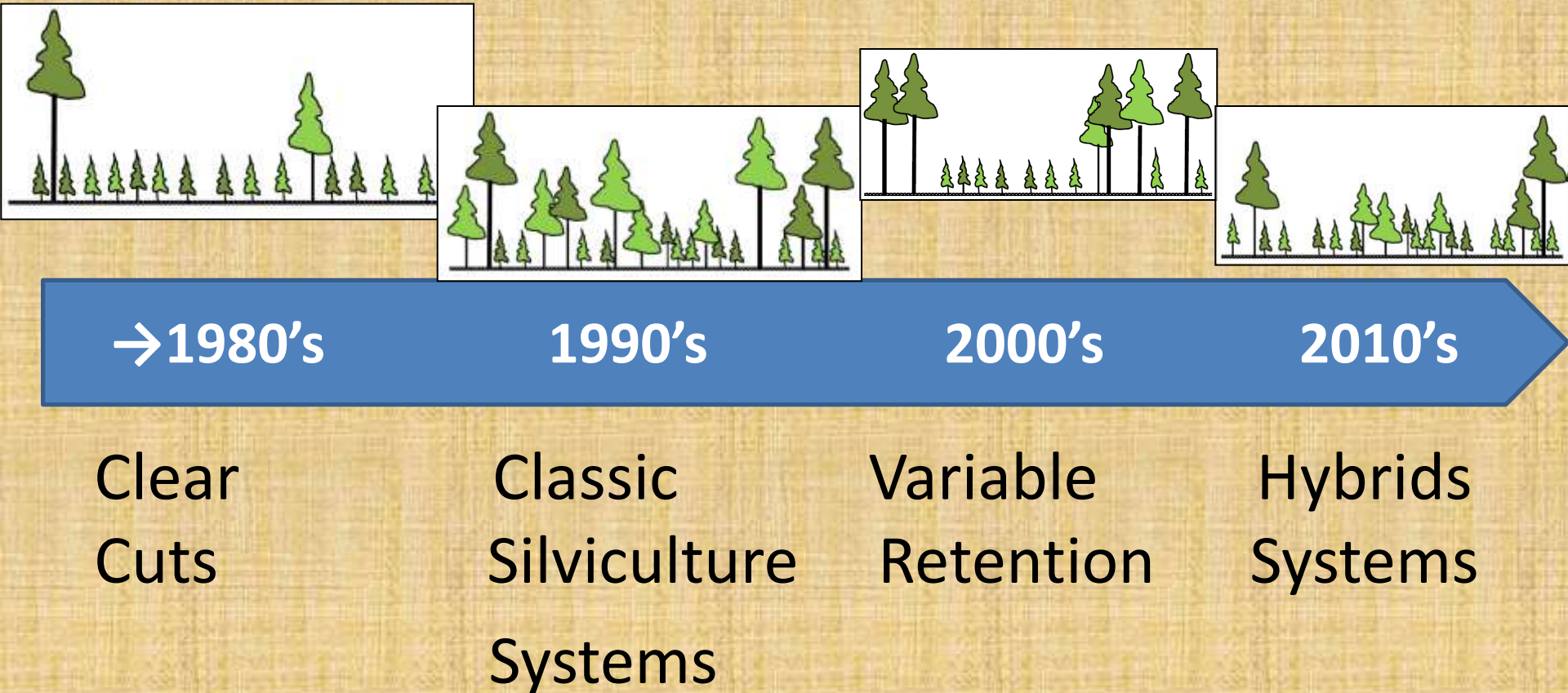


**“Simplicity
is complexity
resolved.”**

-Constantin Brancusi-

Brief History of Retention in BC

"Dave's Version"

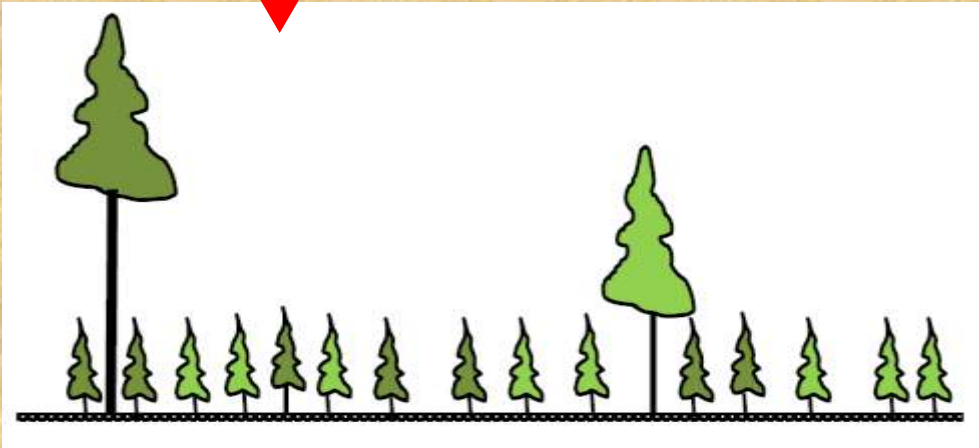


Complex Stand Structure ~ Surveys Manual 2010

1) CC Even-aged

2) Complex Vertical

3) Complex Horizontal



2) Complex **V**ertical Stand Structures

Multi-storey Uneven-aged



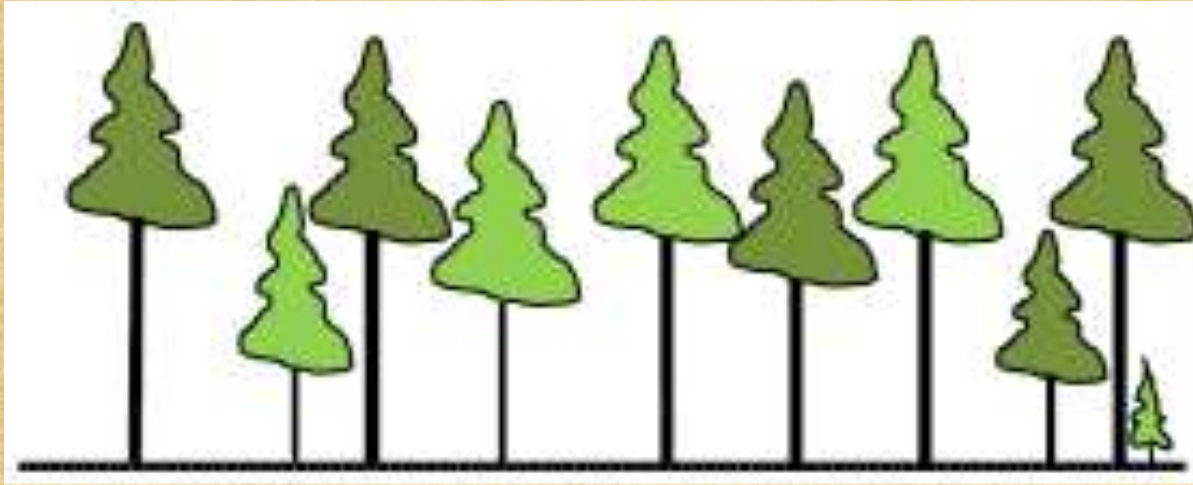
Layered Even-aged – Layered & Deviation from Potential (DFP)



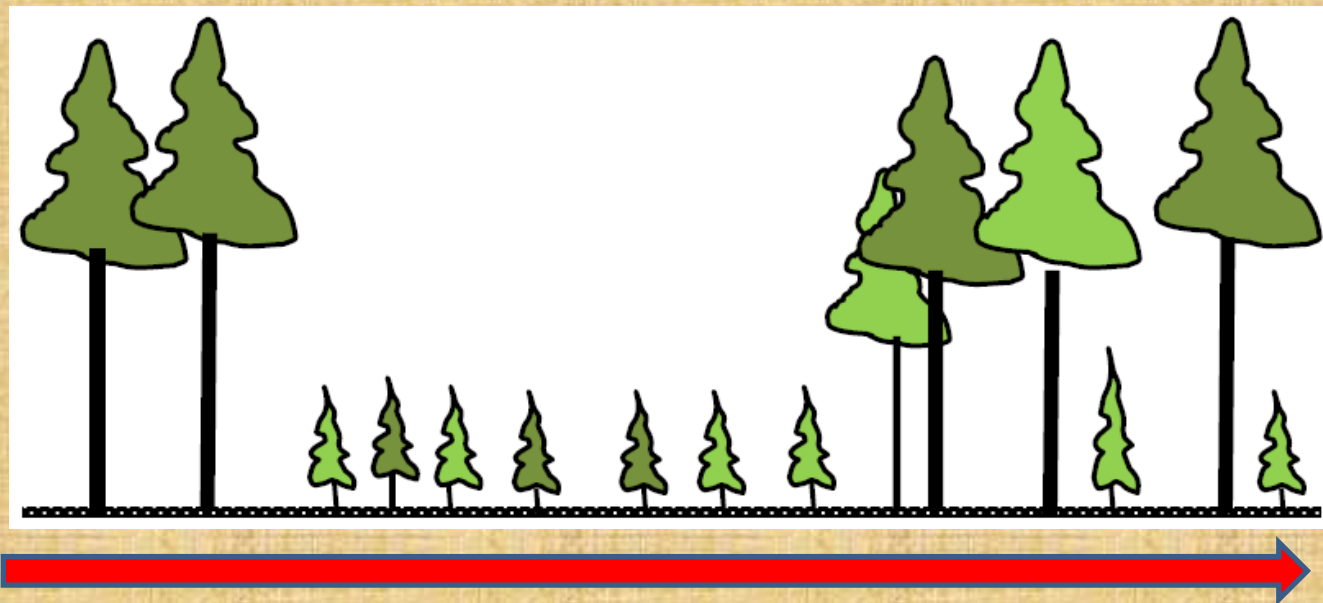
V

3) Complex **H**orizontal Structure

Intermediate Cut – Commercial Thinning



Clearcut with Reserves



Treed Retention Reporting Guidebook

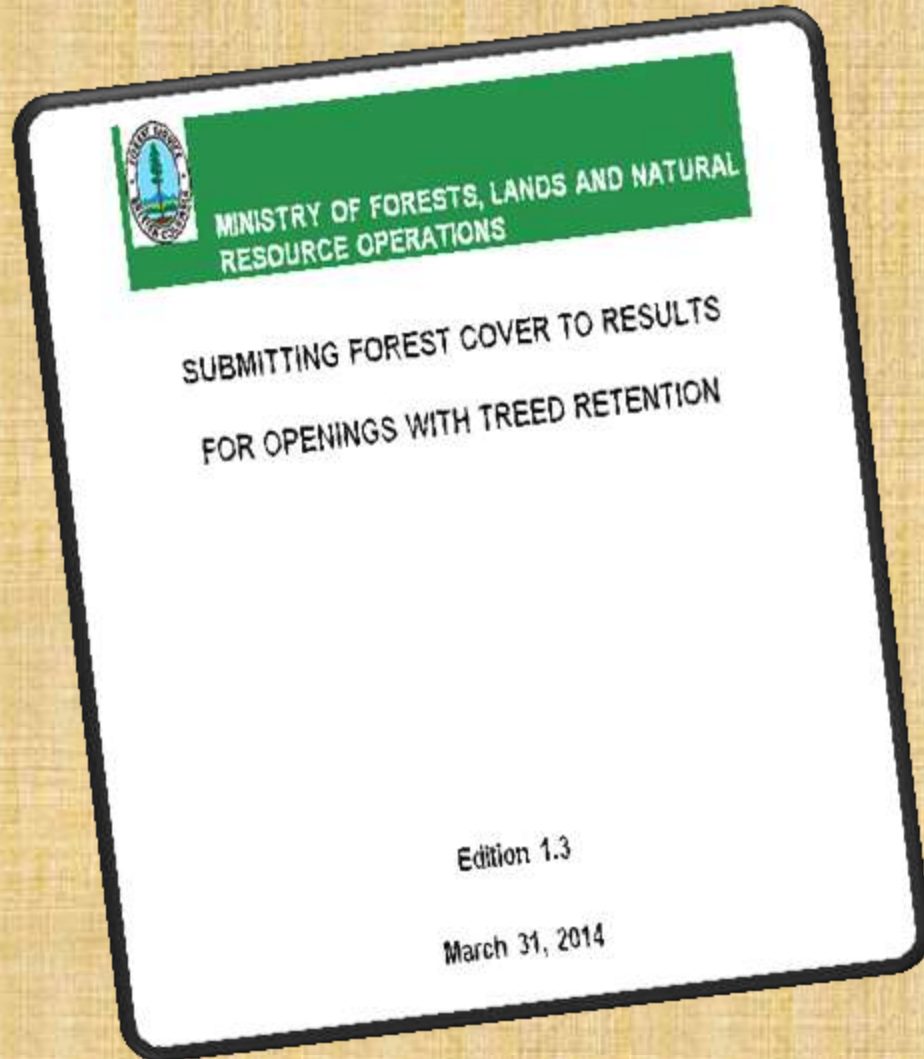


Table of Contents

1. Scope & Intro
2. List of Terms Used – Definitions and Explanations
3. Examples Application – *the Matrix*



Treed Retention Reporting

Scope & Introduction

- Adds to **RISS**
RESULTS Information
Submission Specifications –
Lic, Gov & WL
- Examples for silviculture & harvest practices resulting from **Planned or Unplanned Treed Retention**
> 5 m²/ha BA
- ***Silviculture Systems***
Nomenclature has changed, but RESULTS has not
- *best fit* -
****Reserve-Type, Objective & Layer Reporting****

*****Intent is to help users with existing RESULTS design and report consistency*****

Treed Retention Reporting

*****Requirement*****

Openings with **> 5 m² /ha** of overstorey ***must*** have the ***Inventory label*** reported for the overstorey component

Treed Forest Cover Data



Chief Forest & TSR

*****Accurate & Reflect
Practice on the Ground*****



INV – Layer 1 Stems

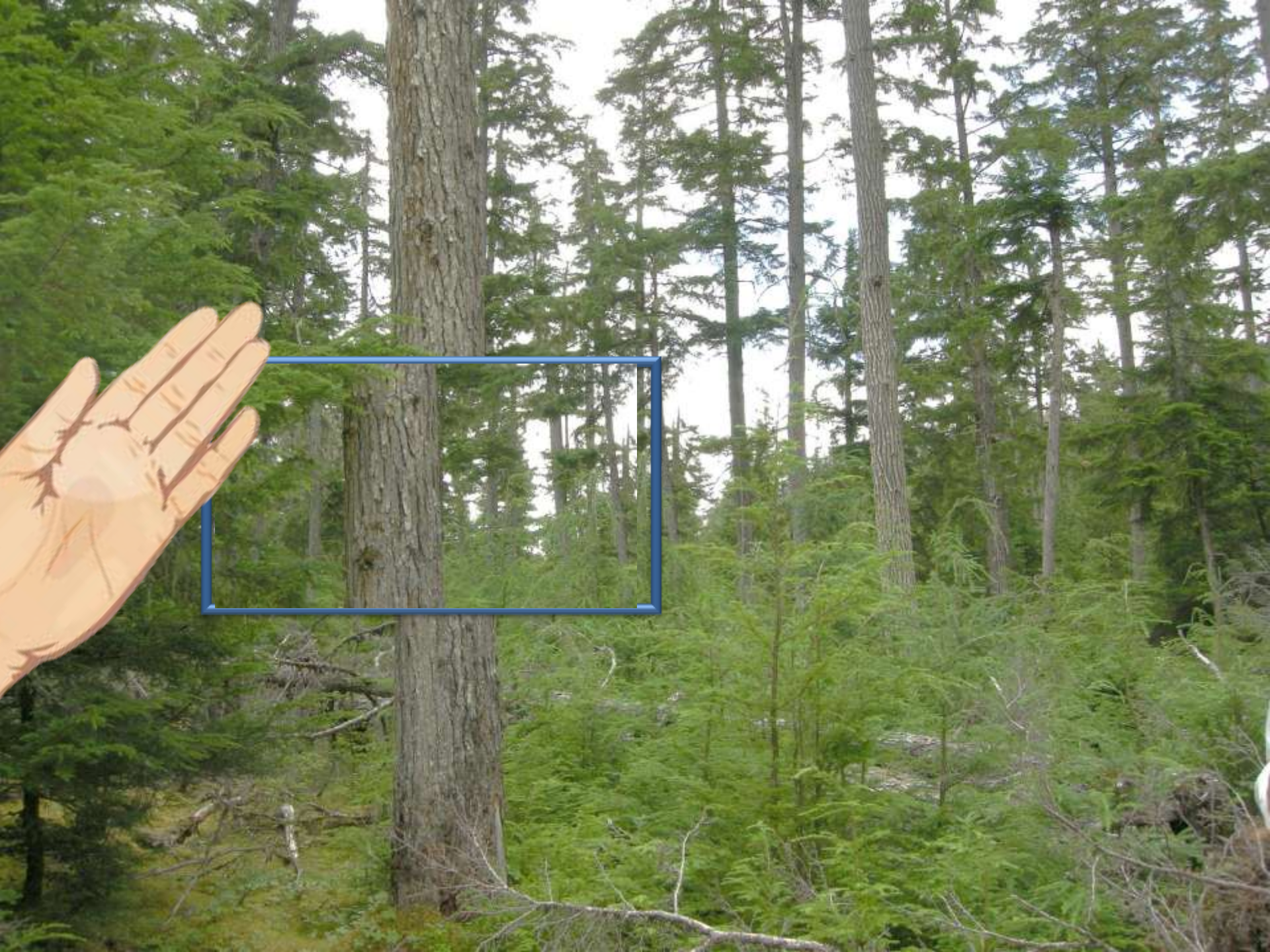
&

INV for all other layers if present

What does ***5 m² / ha Basal Area*** look like?

- 1 tree in your sweep using a BAF 5





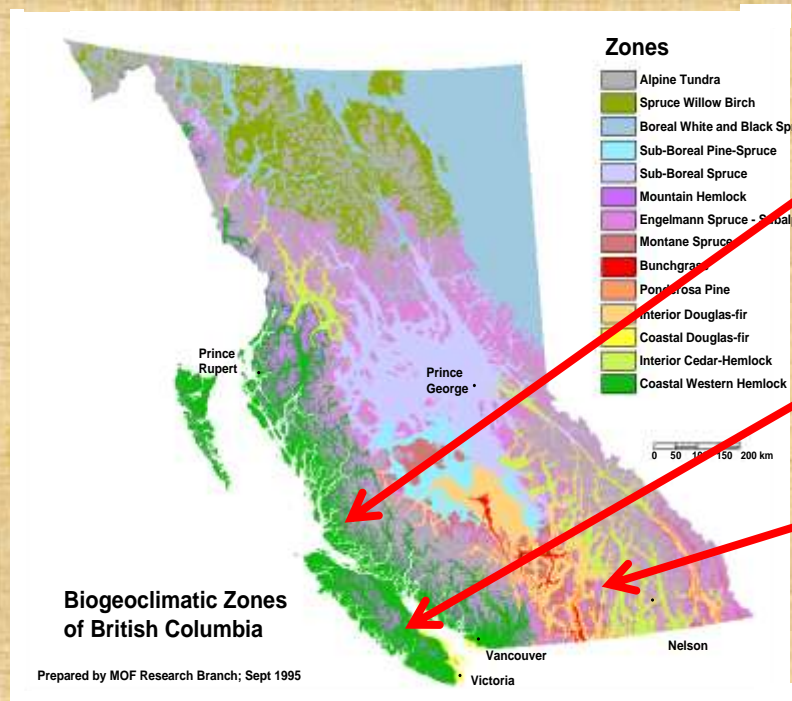
Within BA Retention – 3 types of stands conditions

- The key factor is the diameter of the residual stems ~ varies geographically

1) Coast - Old Growth

2) Coast - Second Growth

3) Interior



1) Coastal – Old Growth

> 5 m²/ ha. Actual 20 m²/ha

1) Coastal – Old Growth



> 5 m²/ ha. Actual 20 m²/ha

1) Coastal – Old Growth



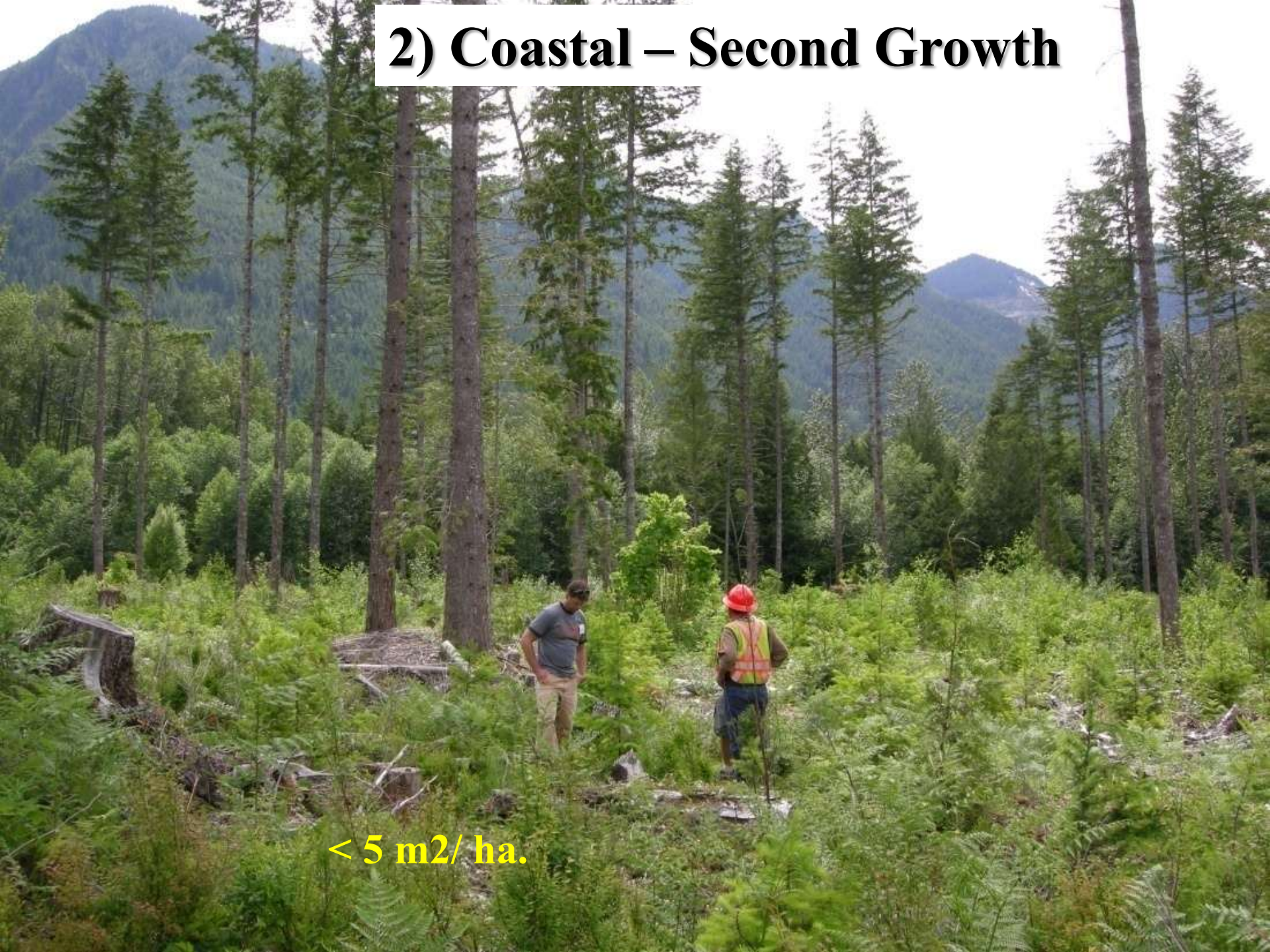
> 5 m²/ ha. Actual 14 m²/ha

2) Coastal – Second Growth



> 5 m²/ ha. Actual 6 m²/ha

2) Coastal – Second Growth



< 5 m²/ ha.

3) Interior

< 5 m²/ ha.



3) Interior

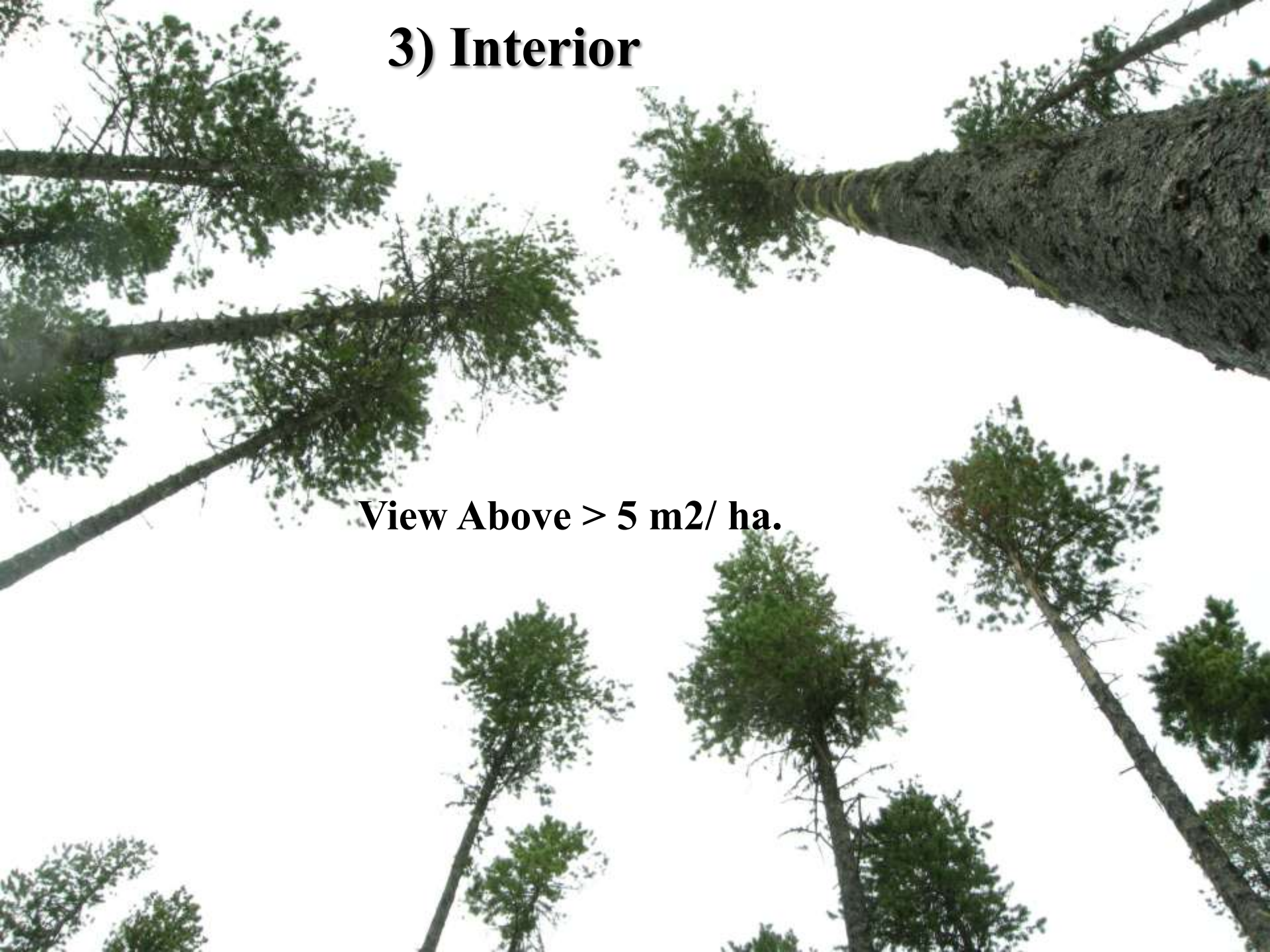
< 5 m²/ ha. in the photo – 12 m²/ ha. in block

3) Interior

> 5 m²/ ha. Actual 16 m²/ha

3) Interior

View Above > 5 m²/ ha.

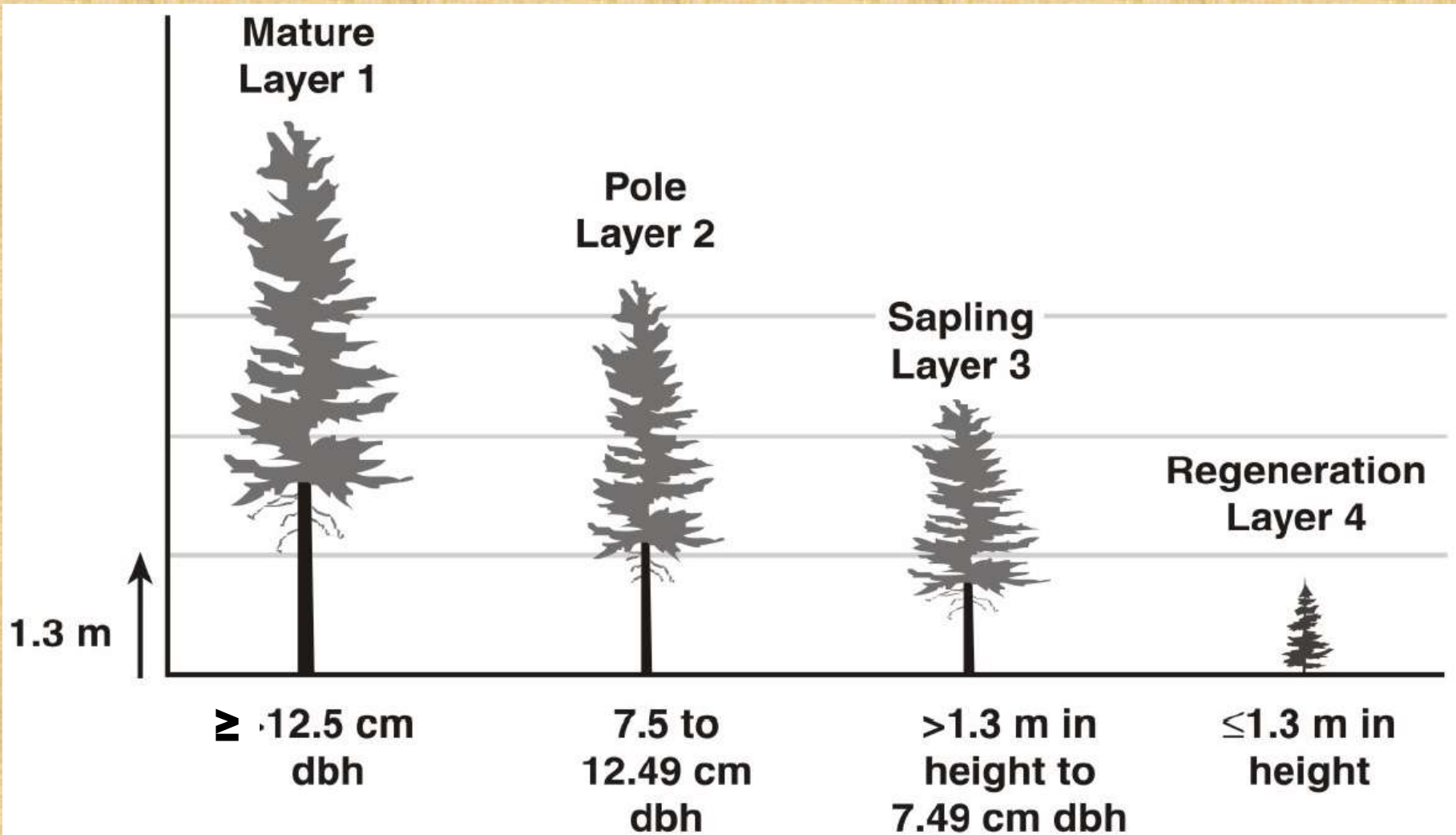


3) Interior

> 5 m²/ ha. Actual 15 m²/ ha.

List of Terms Used (6)

1) Forest Cover Canopy Layers

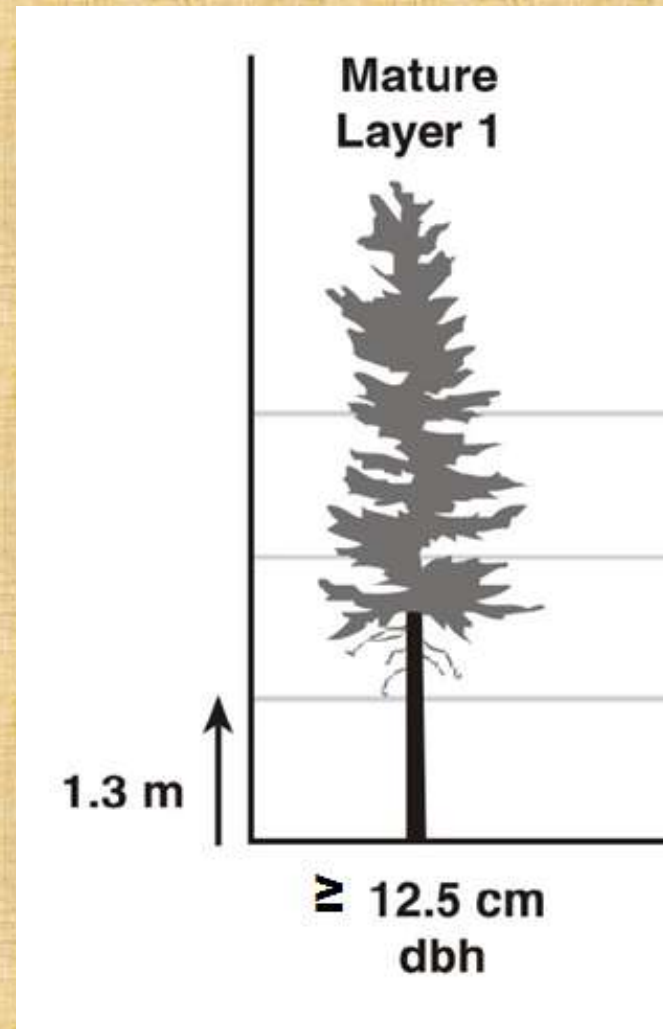


List of Terms Used

2) Residuals & Retention

- **Layer 1** trees remained
 - *singularly* or in **groups**, after a bounded area has been subject to a *stand disturbance*.

(harvesting or natural events)



List of Terms Used

3) Reserve Type

- **Group**

- *Unharvested residual treed patches of aggregated individuals that are mappable*
- ≥ 0.25 ha.



- **Dispersed**

- *Residual treed portions with usually individually separated stems and are not mappable*
- < 0.25 ha. if aggregated



List of Terms Used

4) Length of Term

- Long term Residuals or *Reserves*
 - not available for a subsequent harvest entry until after the next rotational planning cycle
 - referred to as “*Reserves*”
 - *Non-Timber* Objective

- Short term Residuals or *Retention*
 - available for a subsequent harvest entry prior to the end of the current rotational planning cycle (whether or not harvested)
 - referred to as “*Retention*”
 - *Timber* Objective

Could look the same!!



=



Just different Objective

List of Terms Used

5) Reserve Objective

- **Non-Timber**

- **CHR** - Cultural Heritage & CMT's
- **VIS** – Visual
- **WTR** – Wildlife Tree Reserve
- Longer term

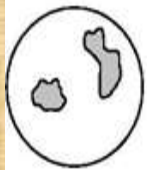
OR

- **Timber Management**

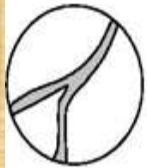
- **TIM**
- Can be a shorter term, but usually longer term

List of Terms Used

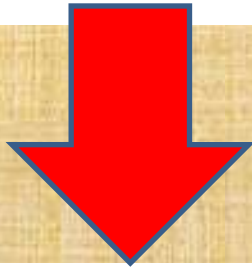
6) Tree Cover Pattern



1. Single to very few (<4) occurrences of limited extent, circular to irregular shape.



2. Single to very few (<4) occurrences of limited extent, linear or elongated shape.



8. Continuous occurrence with several inclusions.






9. Continuous occurrence with very few inclusions.

- 1 to 9 value
- ***Tree cover pattern*** is the horizontal spatial arrangement of residual patches of overstorey (Layer 1) in a polygon
- pages 60-61 in the *Vegetation Resource Inventory Photo Interpretation Procedures*

Treed Retention Reporting *the "Matrix"*



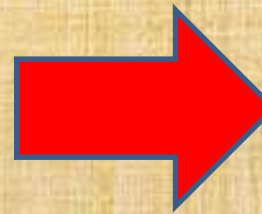
RETENTION OPENINGS – with $> 5 \text{ m}^2 / \text{ha}$. Basal Area Retention

Steps	<u>Silviculture Survey Manual Guidance</u> <i>Section referenced below in red</i>				<u>Treed Retention Submission into RESULTS</u> <u>Guidance</u> <i>Section referenced below in red</i>	
	1 →	2 →		3 →	4a or 4b	
	Conifer Management Regime	Planned &/or Resultant Stand Structure <i>Sec 1.2</i>	Stand Structure Example Illustrations	Recommended Survey Methodology	Long Term Retention ³ – Reserves <i>Sec 4.1</i>	Short Term Retention ⁶ – part of a Silv System <i>Sec 4.2</i>
1a	Obligation					
	Timber Priority					
	Single Entry					
	Even-Aged	Complex Vertical Structure Dispersed Retention ³ – ~↓BA		Layered <i>Sec 9.2.2</i>	Dispersed <i>Sec 4.1.2 & 4.1.3</i>	Unharvested Stems <i>Sec 4.2.4</i>
		Complex Vertical Structure Dispersed Retention – ~↑BA		DFP Interior or Layered <i>Sec 9.2.3</i>	Dispersed <i>Sec 4.1.2 & 4.1.3</i>	Unharvested Stems <i>Sec 4.2.4</i>
	Multiple Entry					
	Uneven-Aged					
	Single Tree Selection IDF only	Complex Vertical Structure Dispersed Retention		Multi-storey <i>Sec 9.2.1</i>		Single Tree <i>Sec 4.2.1</i>

Treed Retention Reporting Matrix

“RETENTION OPENINGS – with $> 5 \text{ m}^2 / \text{ha. BA}$ ”

**Silviculture Survey
Procedures
Manual**



**Treed Retention
Submission into
RESULTS**

Steps	1 →	2 →	3 →	4a or 4b	
	Conifer Management Regime	Planned &/or Resultant Stand Structure & Illustrations	Recommended Survey Methodology	Long Term Retention	Short Term Retention



Treed Retention Reporting Matrix

1. *Conifer Management Regime*

1a. Obligation – *Timber* Priority

- *Single Entry Even –Aged (Long Rotation) OR*
- *Multiple Entry Uneven-Aged (Single Tree or Group Selection)*
 - *Complex Vertical Structure Dispersed Retention OR*
 - *Complex Horizontal Structure Group Retention*

1b. Obligation – *Non-Timber* Priority

- *Same as 1a. above*

1c. No Obligation - $\geq 20 \text{ m}^2$ Interior $\geq 40 \text{ m}^2$ Coast

- *Intermediate Cut; Commercial Thin (ER ; WFI)*
 - *Complex Horizontal Structure Dispersed Retention*

Matrix Use

Scenarios / Case Studies - 5

1. **Merritt** - *IDF Fdi vets 5 – 20m2 Layer 1&4*
2. **Tofino** – *CWHvh1 – SEDRSS*
3. **Williams Lake** - *WL IDF Multi-storey single tree*
4. **Powel River** – *WL CWH Intermediate Cut*
5. **Quesnel** – *ESSF caribou habitat group selection*

Matrix Use

Scenarios / Case Studies – 1a(i)

Merritt – Site description

- IDFdk1 - Dispersed retention
- Timber Management
- Layer 1 – Fdi 10 vets ranging 5 – 20m2 (9 m2 ave.)
- Layer 4 - Pli 70 Fdi 30
- Even-aged stocking standards

Layered Survey Method

Treed Reporting

- Short Term, Unharvested Stems **Sec 4.2.4**
- Reserve Type = *Dispersed*.
Reserve Objective = *TIM*.
Inventory & Silviculture Components=*Layer 1 & 4 (if L1 Crop trees for Silv.)*
Tree Cover Pattern = 5

Merritt





Visual Slide 13



Visual Slide 1



Matrix Use

Scenarios / Case Studies – 1a(ii)

Williams Lake - Woodlot

Site description

- IDFdk3 - Single Tree Selection - Dispersed retention
- Timber Management
- All Layers – Fdi 70 Pli 30 8 m2/ha overstorey
- Uneven-aged stocking standards

Multi-storey Survey Method

Treed Reporting

- Short Term, Single Tree
Sec 4.2.1
- Reserve Type = *Dispersed*.
Reserve Objective = *TIM*.
Inventory & Silviculture Components = *Layer 1,2,3, 4*
Tree Cover Pattern = 8

Williams Lake



Image © 2014 Province of British Columbia

Matrix Use

Scenarios / Case Studies – 1b(i)

Tofino – Site description

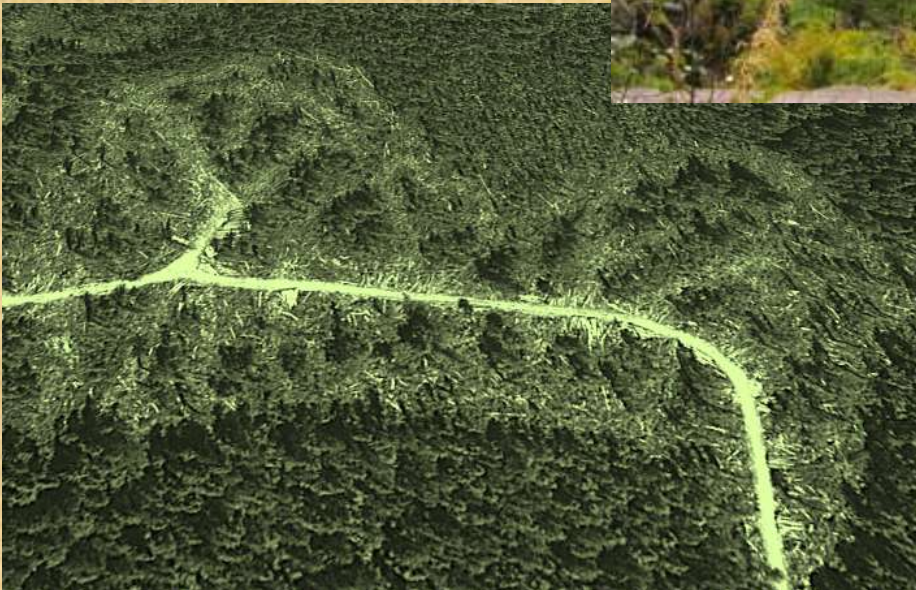
- CWHvh1 - Dispersed retention
- Non-Timber Priority – Cultural Cw Retention
- Layer 1&2 – Cw 70 Hw 30 20 m2 ave.
- Layer 3 - Cw 60 Hw 30 PW 10
- Even-aged management

SEDRSS Survey Method

Treed Reporting

- Long Term, Dispersed
Sec 4.1.2
- Reserve Type = *Dispersed*.
Reserve Objective = CHR.
Inventory & Silviculture Components = *All Layers (if L1 Crop trees for Silv.)*
Tree Cover Pattern = 5

Tofino



DFP Interior

Visual slide 39



DFP

Visual slide 57



Matrix Use

Scenarios / Case Studies – 1b(iii)

Quesnel – Site description

- ESSFwk1 – Multiple Entry Group Retention
- Non-Timber Priority – Caribou Habitat Protect
- Layer 1 – Bl 70 Se 30
22 m2 ave. Retained Groups
- Layer 4 - Se 60 Bl 30 in Openings
- Uneven-aged management

Small Scale Openings Survey Method

Treed Reporting

- Short Term, Group Selection **Sec 4.2.2**
- Reserve Type = *Group*
Reserve Objective = *TIM.*
Inv. = *Layer 1 Ret. Groups*
Inv. & Silv. = *Layer 4 Cuts*
Tree Cover Pattern = 9
(for Ret. Group SU only)

Quesnel



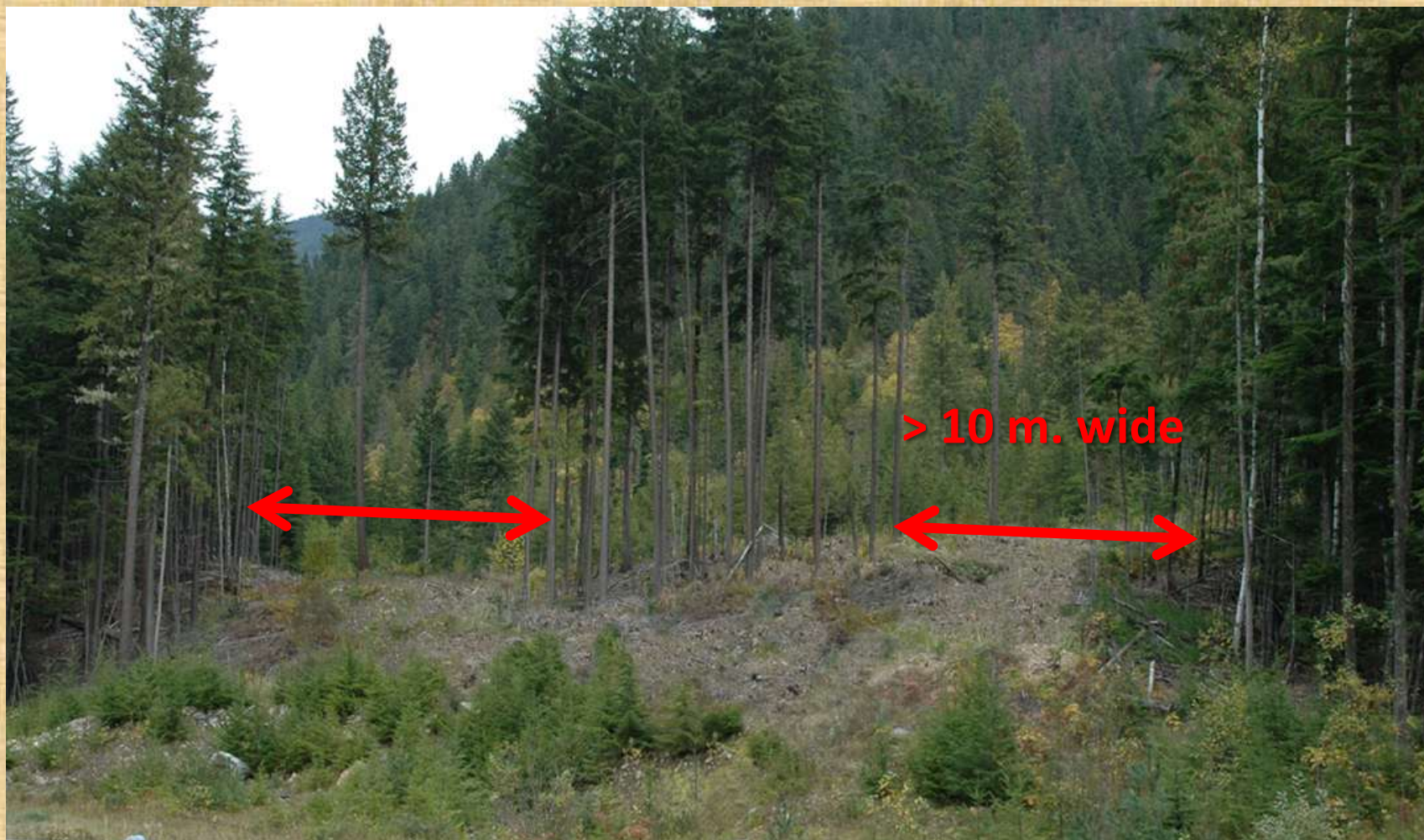
Group Selection

-like small scale Clear Cut-

- > 10 wide (otherwise Single Tree Selection or Intermediate Cut)



Visual Slide 58



Visual Slide 41



Visual Slide 53



Matrix Use

Scenarios / Case Studies – 1c(i)

Powell River Woodlot

– Site description

- CWHxm1-Intermediate Cut
- Timber Management – Pole Removal
- Layer 1 – Cw 70 Fdc 30 45 m2 ave. left
- No stocking obligation
- But must create Opening in RESULTS

Commercial Thin Survey Method

Treed Reporting

- Short Term, No Regen Objectives **Sec 4.2.3**
- Reserve Type = *Dispersed*.
Reserve Objective = *TIM*.
Inventory & Silviculture Components = *Layer 1 only*
Tree Cover Pattern = 9

Powell River





Commercial Thin

Visual Slide 30



Visual Slide 29



Retention Measurement & Reporting Summary

- **Complex Vertical & Horizontal Structure**
- *Planned or Unplanned Treed Retention*
> 5 m²/ha BA
- **Existing RESULTS design**
best fit - Reserve-Type, Objective & Layer Reporting
- **> 5 m² /ha overstorey**
must have Inventory Label
- *What does 5 m²/ha BA look like?*
- **Treed Retention Reporting Guidebook**
 - *Reserve Type: Group or Dispersed*
 - *Long or Short Term*
 - *Timber or Non-Timber Objective*
- **“Matrix” Silv. Survey Manual** → *Treed Retention Reporting*

Thank You and Question Period



Dave Weaver
Silviculture
Performance
Assessment
Specialist