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”

→ 1980’s  1990’s  2000’s  2010’s

Clear Cuts  Classic Silviculture  Variable Retention  Hybrids Systems

Systems
Complex Stand Structure ~ Surveys Manual 2010

1) CC Even-aged
2) Complex Vertical
3) Complex Horizontal
2) Complex Vertical Stand Structures

Multi-storey Uneven-aged

Layered Even-aged – Layered & Deviation from Potential (DFP)
3) Complex Horizontal 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 $5 \text{ m}^2 / \text{ ha Basal Area}$ 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
> 5 m²/ha. Actual 20 m²/ha

1) Coastal – Old Growth
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.
< 5 m²/ ha.

3) Interior
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

- Mature Layer 1
- Pole Layer 2
- Sapling Layer 3
- Regeneration Layer 4

- \( \geq 12.5 \, \text{cm dbh} \)
- 7.5 to 12.49 cm dbh
- >1.3 m in height to 7.49 cm dbh
- \( \leq 1.3 \, \text{m in height} \)
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
5) Reserve Objective

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

- **Timber Management**
  - **TIM**
  - Can be a shorter term, but usually longer term
List of Terms Used

6) Tree Cover Pattern

- 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”

<table>
<thead>
<tr>
<th>Steps</th>
<th>1 →</th>
<th>2 →</th>
<th>3 →</th>
<th>4a or 4b</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Conifer Management Regime</td>
<td>Planned &amp;/or Resultant Stand Structure</td>
<td>Stand Structure Example Illustrations</td>
<td>Recommended Survey Methodology</td>
</tr>
<tr>
<td>1a</td>
<td>Obligation Timber Priority</td>
<td>Complex Vertical Structure</td>
<td>Layered Sec 9.2.2</td>
<td>Dispersed Sec 4.1.2 &amp; 4.1.3</td>
</tr>
<tr>
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<td>Single Entry Even-Aged</td>
<td>Dispersed Retention – BA</td>
<td>Unharvested Stems Sec 4.2.4</td>
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<tr>
<td></td>
<td>Multiple Entry Uneven-Aged</td>
<td>Complex Vertical Structure</td>
<td>Multi-storey Sec 9.2.1</td>
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<tr>
<td></td>
<td>Single Tree Selection IDF only</td>
<td>Dispersed Retention</td>
<td>Single Tree Sec 4.2.1</td>
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</tr>
</tbody>
</table>

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Silviculture Survey Manual Guidance
Section referenced below in red

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Treel Retention Submission into RESULTS Guidance
Section referenced below in red

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Long Term Retention – part of a Silv System Sec 4.2

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Short Term Retention – part of a Silv System Sec 4.2

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Unharvested Stems Sec 4.2.4

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Single Tree Sec 4.2.1

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Treed Retention Reporting Matrix

“RETENTION OPENINGS – with > 5 m² / ha. BA”

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<td>Long Term Retention</td>
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</table>

Silviculture Survey Procedures Manual

Treed Retention Submission into RESULTS
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
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
Matrix Use
Scenarios / Case Studies – 1b(i)

Tofino – Site description

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

SEDRSS Survey Method

Treed Reporting

- Long Term, Dispersed
- Reserve Type = Dispersed.
- Reserve Objective = CHR.
- Inventory & Silviculture Components = All Layers (if L1 Crop trees for Silv.)
- Tree Cover Pattern = 5
Tofino
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)
> 10 m. wide
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
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

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