FREP Monitoring Protocol For Timber Objectives and Partial Cutting

Background & Pilot Experiences on Haida Gwaii

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Resource Stewardship Monitoring Program

Partial Cutting Timber Protocol

Developed by:

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- Pat Martin and Al Powelson – Forest Practices Branch

With Input from:

- 22 folks from 7 Forest Districts and 2 Regional Offices
- Ken Day, UBC Alex Fraser Research Forest

BACKGROUND: The Intent of the Protocol…

To Evaluate Achievement of FRPA Timber Objectives – related to partial cutting:

FOCUS:

- ***Are partial cutting practices sustainable?***
- ***Are partial-cutting regeneration opportunities being maintained?***
- ***NOT – COMPLIANCE WITH FREE-GROWING OBLIGATIONS***

BACKGROUND: Block Selection…

RESULTS Query - Criteria:

- Layer 1 trees in the Inventory Label
- Silvi systems that are NOT Clearcut with/without reserves
- Intermediate cuts
- Blocks without standard Even-aged Stocking Standards

The Sample…

SAMPLE AND MAP AREAS IN NAR WITH:

1. **Dispersed overstory > 20 m^2/ha.**
2. **Dispersed overstory 10 to 20 m^2/ha (in separate stratum from #1).**
3. **Small unharvested clumps included in #1 or #2 above.**

DO NOT SAMPLE AREAS WITH:

1. **Areas with low levels of overstory (< 10 m^2/ha)**
2. **Large patches of unharvested area (generally mapped)**

BACKGROUND: The Monitoring Questions…

1. IS GROWING SPACE **well-occupied** by **well-spaced**, **unimpeded**, **ecologically suitable crop trees** with **no obvious risk of loss** over the rotation?
2. Is STAND VALUE – Being **maintained (as a minimum)** due to **species composition?**
3. WHERE DIRECTED TO HARVEST A SPECIES - **does the proportion of non-directed species exceed a minimum target level?**

BACKGROUND: Approach to Sampling

SIMILAR TO APPROACH USED IN STAND LEVEL BIODIVERSITY FREP MONITORING – with the following sample size:

- **MIN - 5 plots per stratum up to 5 ha.**
- **PLUS - one plot for every ha over 5 ha.**
- **LESS PLOTS - if time limited and stratum is very uniform.**
- **ADD 5 PLOTS – Where highly variable and not clear if plots are representative.**

BACKGROUND: Plot Data - OVERSTORY

PRISM – Similar approach as Stand Level Biodiversity with:

- "IN" Trees (> 17.5 cm dbh) tallied in the following categories:

Ecologically Suitable Tree Species

- High Value Species or Other Species
  - Directed or Non –Directed Species
    - Crop Trees, Poor Trees, or Stumps
      - Riskers or Non-riskers

Poor Tree vs Crop Tree:

POOR TREE (low or no value) – either:

- Heartrot clearly indicated by conks.
- Old wounds or scars
  - With obvious decay, or
  - Associated deformity
  - So value - obviously degraded to low or nil.

Note: if not sure – call “Crop”.

Poor vs Crop Tree:

Poor (old wounds + decay)?

- Must be sure value is low or nil.

Poor (conks)

Risker vs Non-risker:

Risker = High likelihood of mortality over rotation.

- Including:
  - All dead trees
  - Prone to windthrow / snap (ht:dbh ratio > 100 or 20% LC)
  - Sparse crown (Careful with Cw?)
  - Severe recent wound – As per Tree Wounding Guidebook (1997).
  - Recent Lean (significant > 15%)

Risker can be a Poor or a Crop Tree:

- Poor Risker

Crop Risker

BACKGROUND: Plot Data - UNDERSTORY

Regeneration Plot – ONLY Well-spaced Acceptable trees of:

Ecologically Suitable Tree Species (> 15 cm ht and < 17.5 cm dbh)

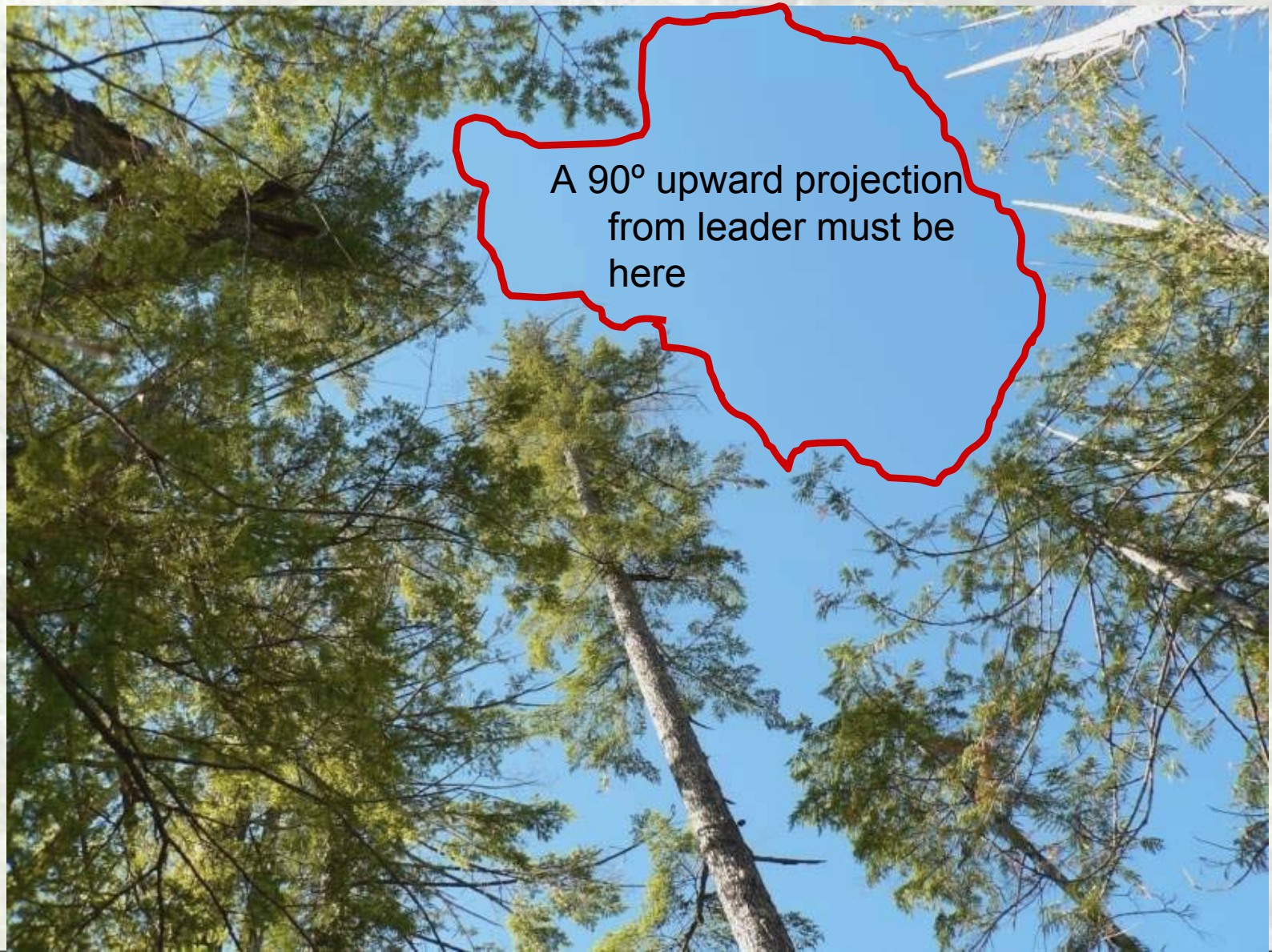
- High Value Species or Other Species
  - Unimpeded (and well-spaced)
- PLUS – Ingress (< 15 cm) up to 10 per plot

Unimpeded Regeneration:

Unimpeded by non-riskers in the overstory:

- Outside crown driplines

Regen Unimpeded by Non-Risker Overstory:



Regeneration Unimpeded by Understory Veg:

- IF NOT impeded by brush such that mortality is imminent
- If not clear but likely impeded - still deemed “impeded”.

Performance Determination - Growing site Occupancy

Use DFP approach to bring together overstory and understory stocking

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Use DFP approach to bring together overstory and understory stocking

Overstory basal area of good and fair vigour trees: ≥ 17.5 cm dbh (12.5 for Pl) Average plot diameter under 60 (40?)cm	Understory density – well spaced sph					
	0	200	400	600	800	1000
0	1.00	0.76	0.52	0.34	0.22	0.13
5	0.86	0.65	0.45	0.30	0.19	0.11
10	0.62	0.47	0.32	0.21	0.14	0.08
15	0.38	0.28	0.20	0.13	0.08	0.05
20	0.19	0.14	0.10	0.07	0.04	0.02
25	0.07	0.05	0.04	0.02	0.02	0.01
30	0.00	0.00	0.00	0.00	0.00	0.00
35	0.00	0.00	0.00	0.00	0.00	0.00
40	0.00	0.00	0.00	0.00	0.00	0.00
45	0.00	0.00	0.00	0.00	0.00	0.00
60	0.00	0.00	0.00	0.00	0.00	0.00
65	0.00	0.00	0.00	0.00	0.00	0.00
65+	0.00	0.00	0.00	0.00	0.00	0.00

Performance Determination
- Do we have Good Growing site Occupancy?

Thresholds:

- **YES** - All is good
- **YESPlus** - Exceeds expectations
- **Perhaps** - Yellow flag
  - may be worth looking at if extensive.
- **NO** - **Red flag**
  - Issues are present
  - If extensive – examine further

Performance Determination
- Do we have Good Growing site Occupancy?

Thresholds (yes, yes+, perhaps, no)
determined by BOTH:

Average Stocking - based on ≤ 15% deviation from potential full occupancy.

Stocking Distribution – based on % plots in different stocking classes.

Performance Determination
- Stand is maintaining Value based on Species

Thresholds – Yes, Yes+, Perhaps, No

Based on:

- Proportion of HIGH VALUE tree species after harvesting compared to preharvest stand.

- For Overstory Crop trees and Understory Unimpeded WS trees.

Performance Determination - Directed Species

ONLY APPLICABLE:

- Where licensees were directed to harvest a species.
- AND – A limit was placed harvest of other species.

- Compare m^2/ha of stumps to m^2/ha of all trees and stumps.

Other Potential Issues being tracked…

No Thresholds – just for information.

- **Windthrow** – average of dispersed or estimate of concentrated windthrow.
- **Long Term Forest Health Concerns** – L, M, H – and describe.
- **Species Diversity** – increase / decrease / or no change

Haida Gwaii – Site #1: Background

- Cw / Hw old growth.
- Significant marginal quality timber.
- Many small openings created throughout.
- Cw planted – but survival poor.

Haida Gwaii – Site #1: Results: Red Flag blk?

1. Is Growing Site Occupancy Good: **PERHAPS**.
   - 10 m^2/ha Crop Overstory Trees
   - 400 sph (UWS) in Understory
   - 40% of plots - OPEN

2. Are we Maintaining High Value Species: **NO**
   - HV basal area as a proportion of the total is 75% less post harvest.
   - Not enough HV Understory to compensate

3. Directed Species: **NA**

Haida Gwaii – Site #1: Results: Red Flag blk?

1. Growing Site Occupancy is Good: **PERHAPS**.
   - 10 m2/ha Crop Overstory Trees
   -
   -
2. Maintaining High Value Species: **NO**
   - HV basal area as a proportion of the total is 75% less post harvest.
   - Not enough HV Understory to compensate

Consider Context – The issue is Planting Survival.

3. Directed Species: **NA**

Haida Gwaii – Site #2: Background

- Cw / Hw old growth.
- High amount of marginal quality timber.
- Scattered few small openings created.
- No planting.

Haida Gwaii – Site #2: Results: Yellow Flag blk.

1. Is Growing Site Occupancy Good: **YES**.
   - 34 m^2/ha Crop Trees
   - 57 sph (UWS)
   - 14% of plots - OPEN

2. Are we Maintaining High Value Species: **PERHAPS**
   - HV basal area as a proportion of the total is 22% less post harvest.
   - Understory insignificant

3. Directed Species: **NA**

So what does this mean?

Not much- based on 1-2 blocks...

- Red or Yellow flags only significant IF THEY EXTENSIVE OVER THE LANDBASE.

- And must consider context with circumstances, stand types, objectives etc.

WHERE TO FIND MORE INFORMATION:

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