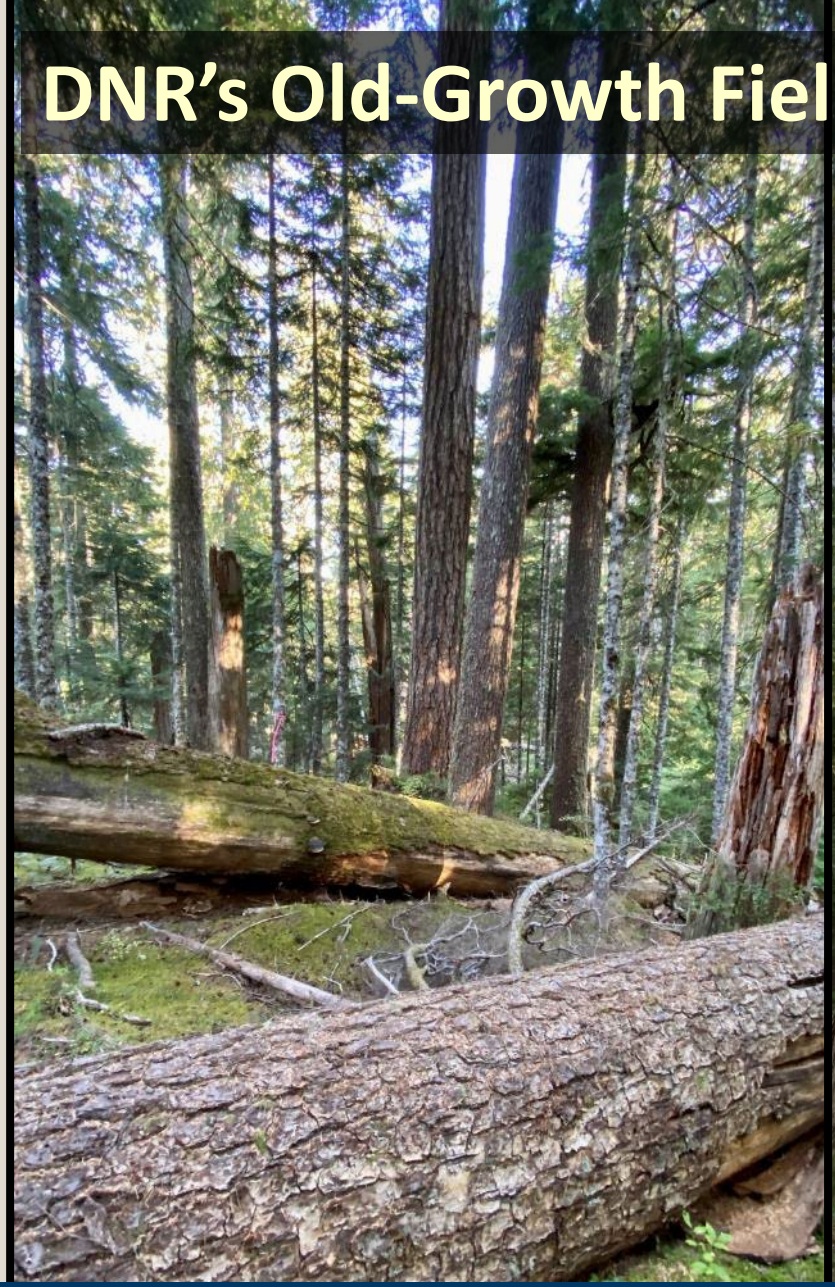

WASHINGTON
DEPARTMENT OF NATURAL RESOURCES

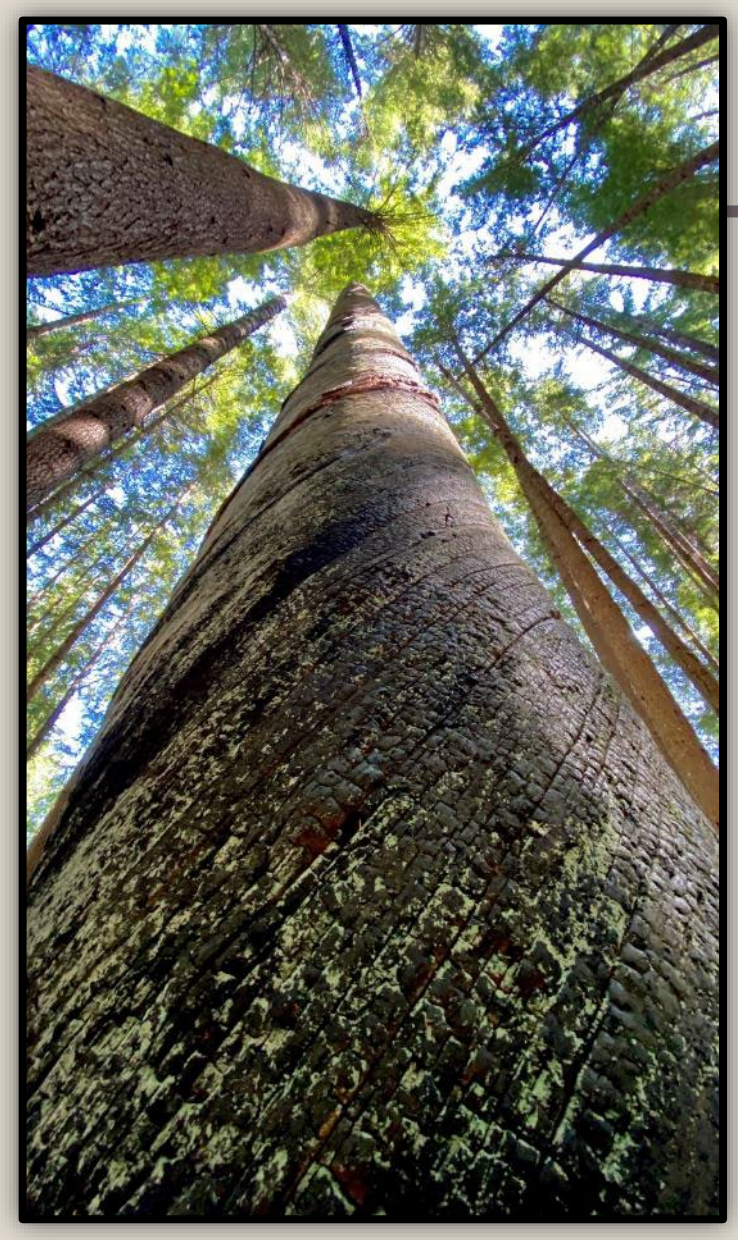
DNR's Old-Growth Field Assessment Process

Alan Mainwaring

South Puget Sound Region -- Fish and Wildlife Biologist

Washington State Department of Natural Resources





DNR's Old-Growth Field Assessment Process

Agenda

- DNR's Old-Growth Definition
- Structure of DNR's Old-Growth Program
- Old-Growth Field Assessment Process
- Summary of Old-Growth Field Assessments

DNR's Old-Growth Definition

Short History:

- The 2004 Washington Legislature directed DNR to inventory old-growth forest stands on state lands as defined by a panel of scientists.

- Old-Growth Definition Committee: Dr. Jerry Franklin, Dr. Thomas Spies, Dr. Robert Van Pelt with Dr. Paula Swedeen and Dr. Rex Crawford assisting alongside DNR Scientists (2005).

DNR's Old-Growth Definition

- Stands in the most structurally complex stage of stand development, sometimes referred to as fully functional; and
- A stand with a natural origin date prior to 1850.
- Five acres is the minimum size for an old-growth polygon. Areas less than 5 acres are protected utilizing other procedures.

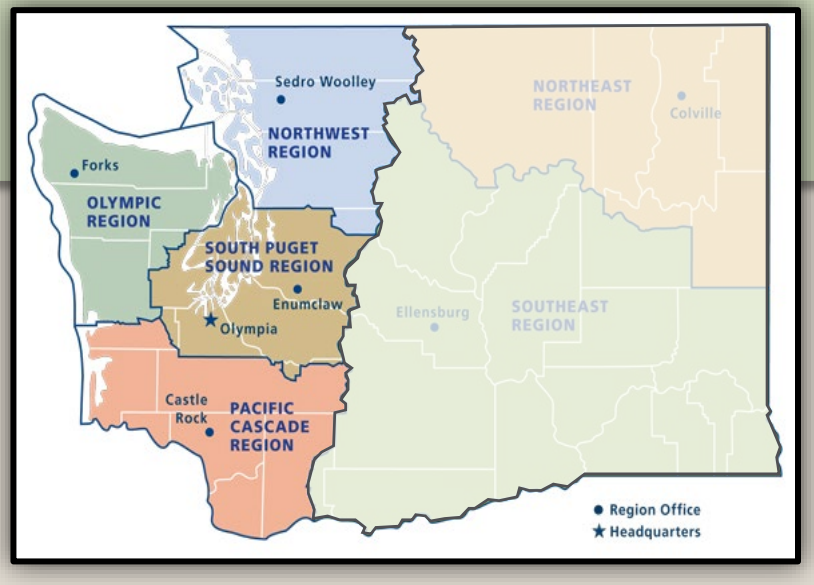
DNR's Old-Growth Definition

- The DNR's old-growth policy also recognizes single, very large diameter, structurally unique trees as important habitat elements.

- These trees, sometimes referred to as old-growth remnants, are often characterized by a large diameter (60+ inches DBH) and possess large limbs, open crowns, broken tops and deeply furrowed bark.

- These trees are the focus for retention to meet HCP requirements for large diameter, structurally unique trees.

Structure of DNR's Old-Growth Program



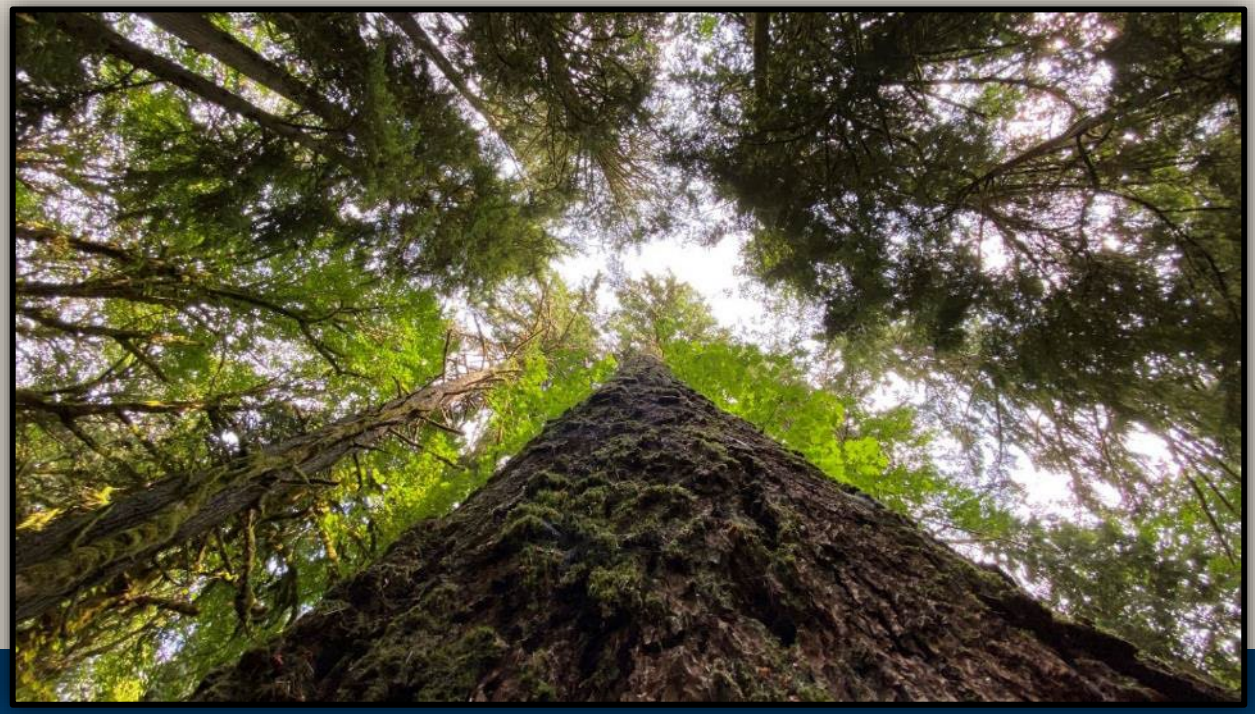
Led by Forest Resources Division
and Dr. Dan Donato

Each west-side region has trained OG "designees"

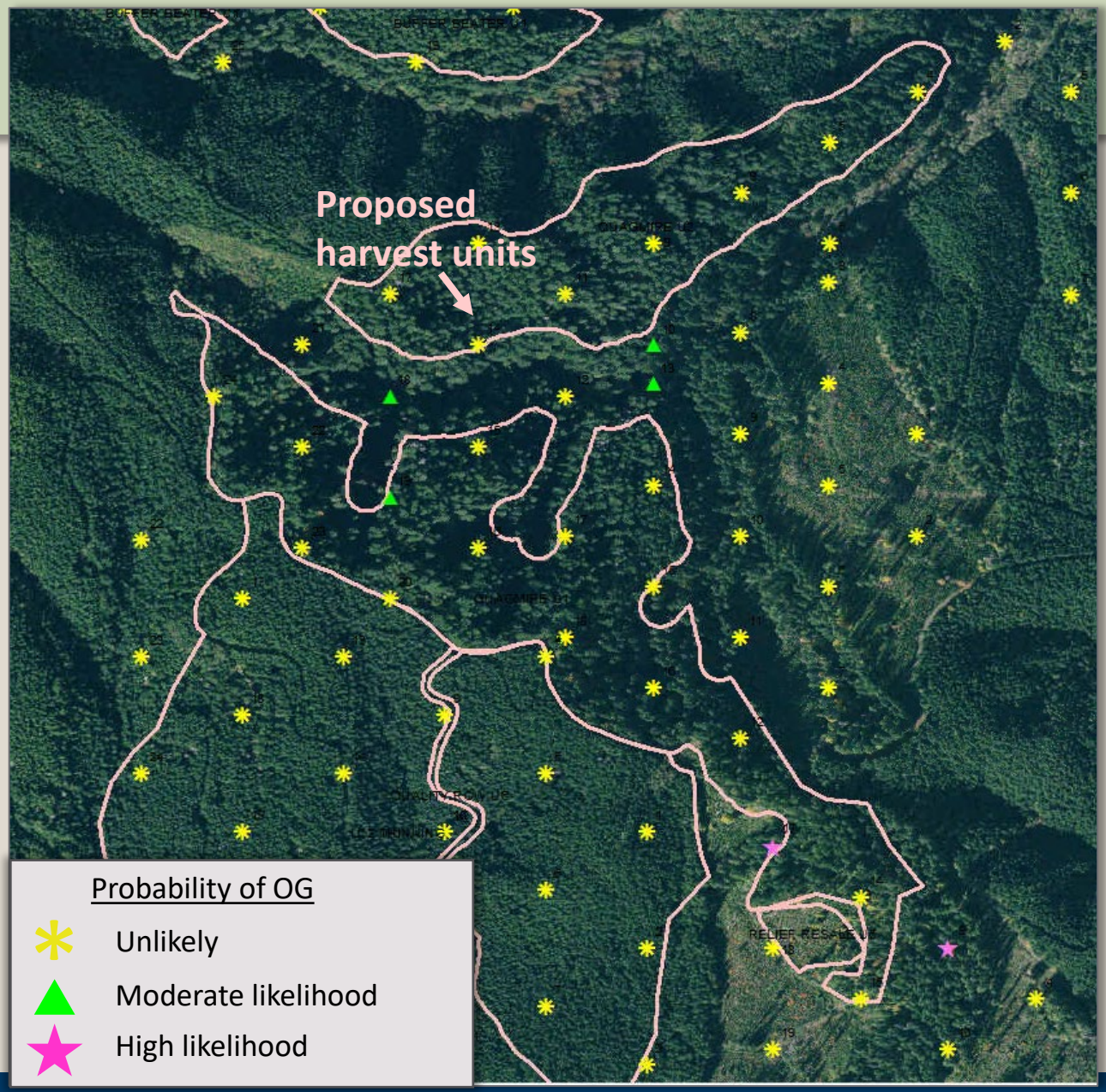
OG trainings are conducted every ~1-3 years

Approach:

- Expose a lot of staff to training to increase awareness
- "Designee" status conferred only after several assessments are completed satisfactorily



What triggers an OG assessment?



1. Forest Inventory Data

- Weighted Old-Growth Habitat Index model scores also known as “WOGHI” scores

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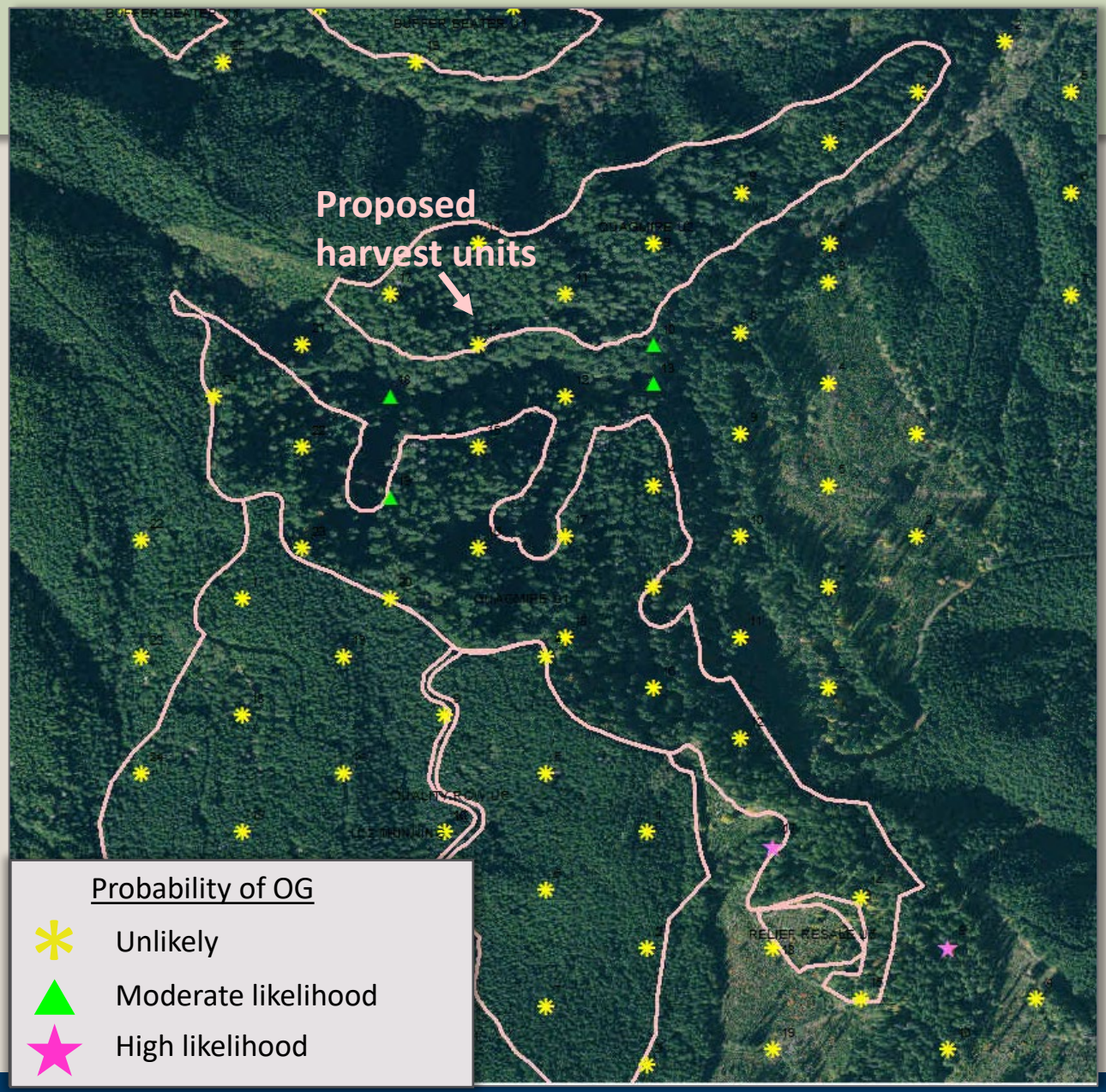

1. Forest Inventory Data

- "WOGHI" scores
  (Weighted Old Growth Habitat Index)
- Model developed by original old-growth expert panel *(Franklin, Spies, Van Pelt, Pabst, et al.)*
- Statistical regressions based on abundance of:
  - Large trees
  - Large snags
  - Down wood
  - Diameter diversity (canopy layers)

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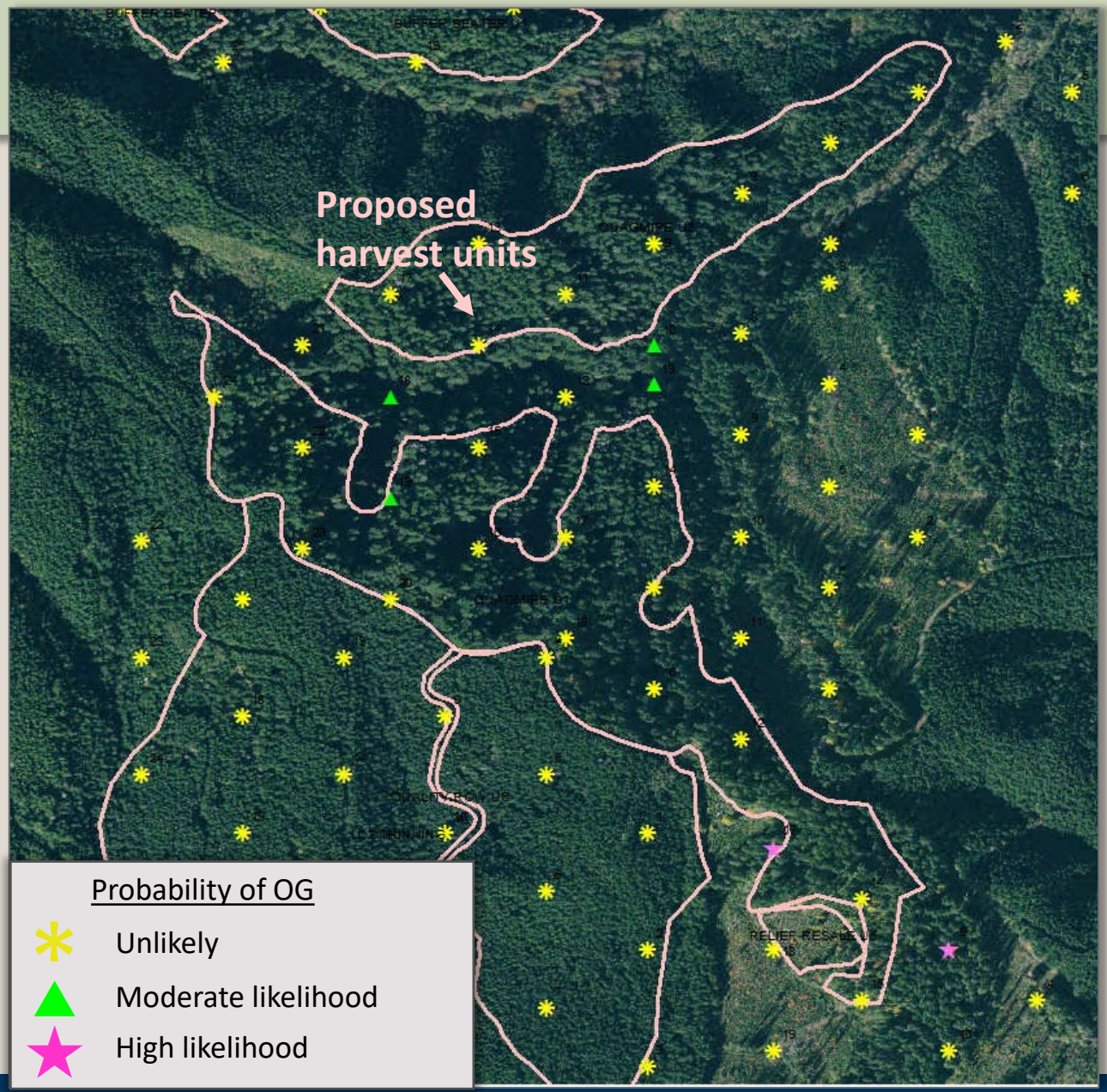

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  - Large trees
  - Large snags
  - Down wood
  - Diameter diversity (canopy layers)
- Moderate & High points in or next to proposed activity trigger an assessment

What triggers an OG assessment?

1. **Forest Inventory Data**
   - "WOGHI" scores
     (Weighted Old Growth Habitat Index)
2. **Observations on the ground**

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3. **Aerial/remote sensing data**

What triggers an OG assessment?

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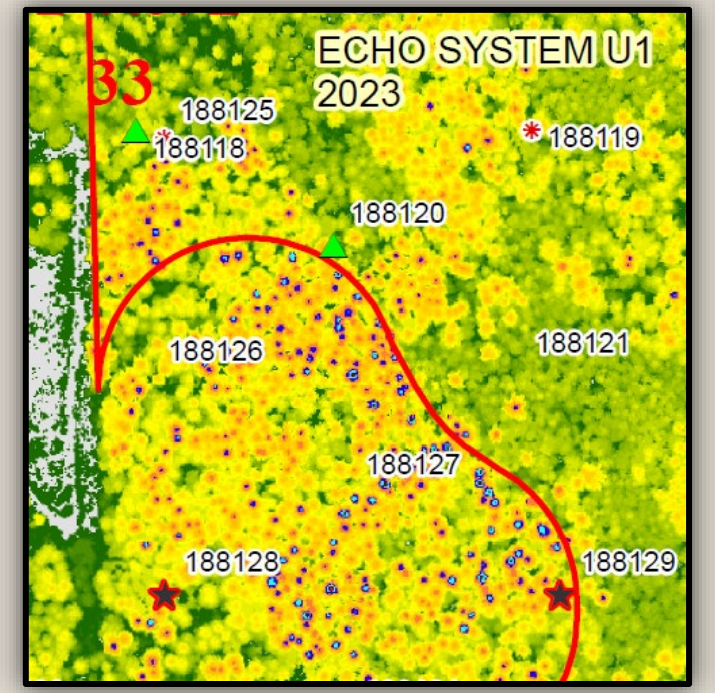
   - "WOGHI" scores
     (Weighted Old Growth Habitat Index)
2. **Observations on the ground**
3. **Aerial/remote sensing data**
4. **Other sources**

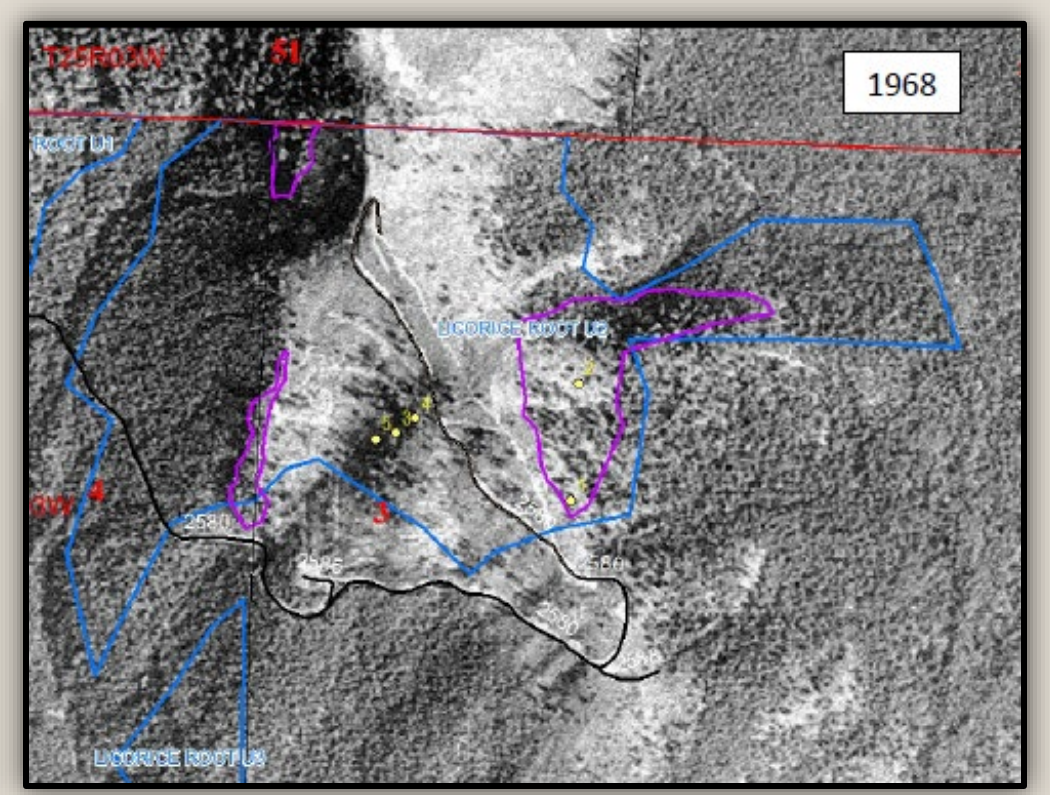
   (e.g. neighbor/public input)

Field Work in an Assessment

Field work begins in the office.

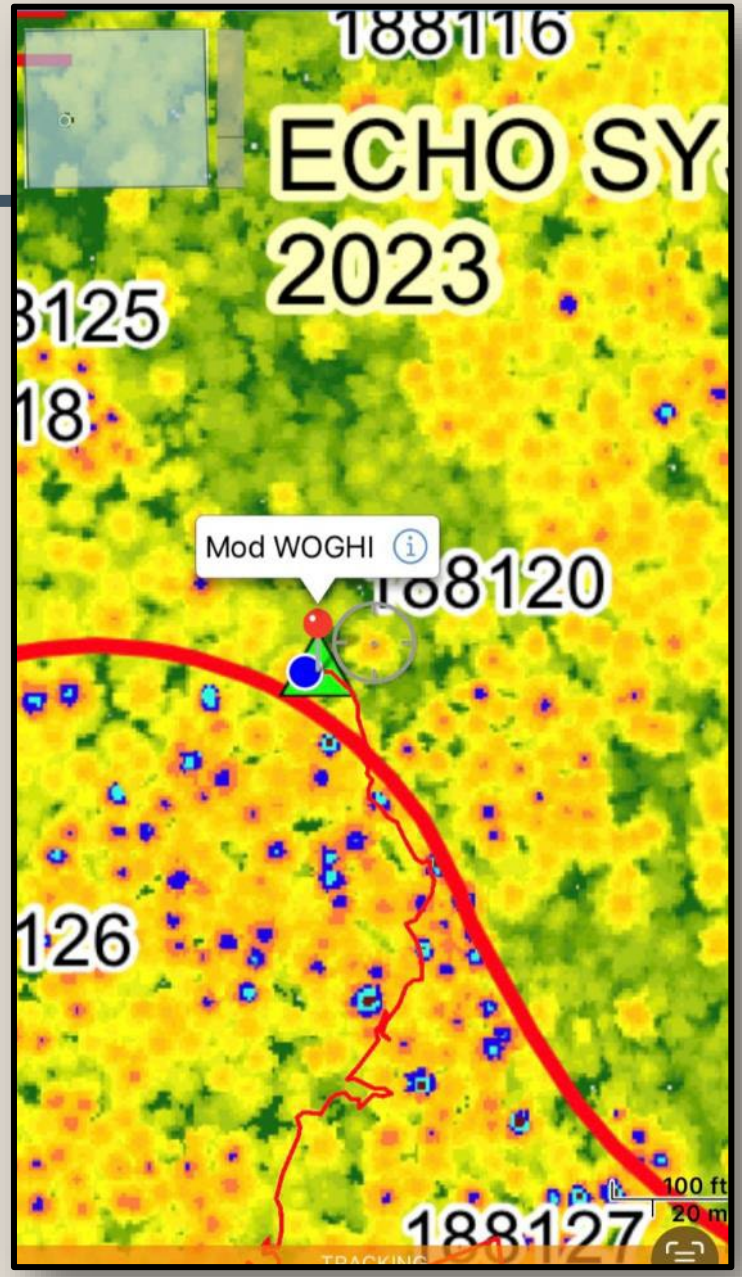
FID_OLD_GROWTH_INDEX_PTS_NEW	21295
HCPUNIT_NM	S. COAST
OBJECTID	292756
RIU_ID	61841
Shape	Point
SPT_DNWOOD_CUB_METERS_HECT	234
SPT_DNWOOD_WGTSCORE	13.5
SPT_LGTREE_STEMS_HECT	25.8
SPT_LGTREE_WGTSCORE	21.8
SPT_LIVETREE_DIADIVER_WGTSCORE	28.1
SPT_NO	9
SPT_OG_POTEN_CLASS	HIGH
SPT_SNAG_STEMS_HECT	0
SPT_SNAG_WGTSCORE	0
SPT_UNIQUE_ID	618410009
SPT_WOGHI	63.4



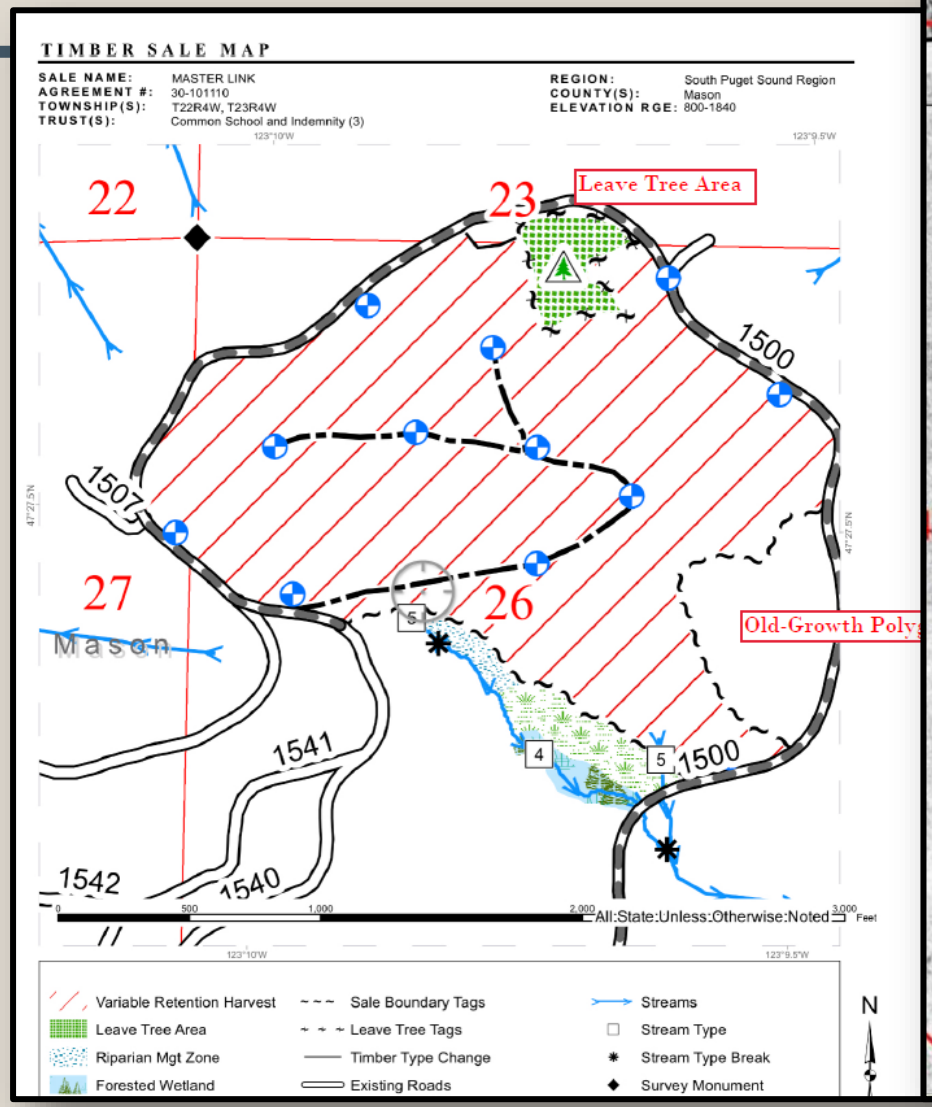


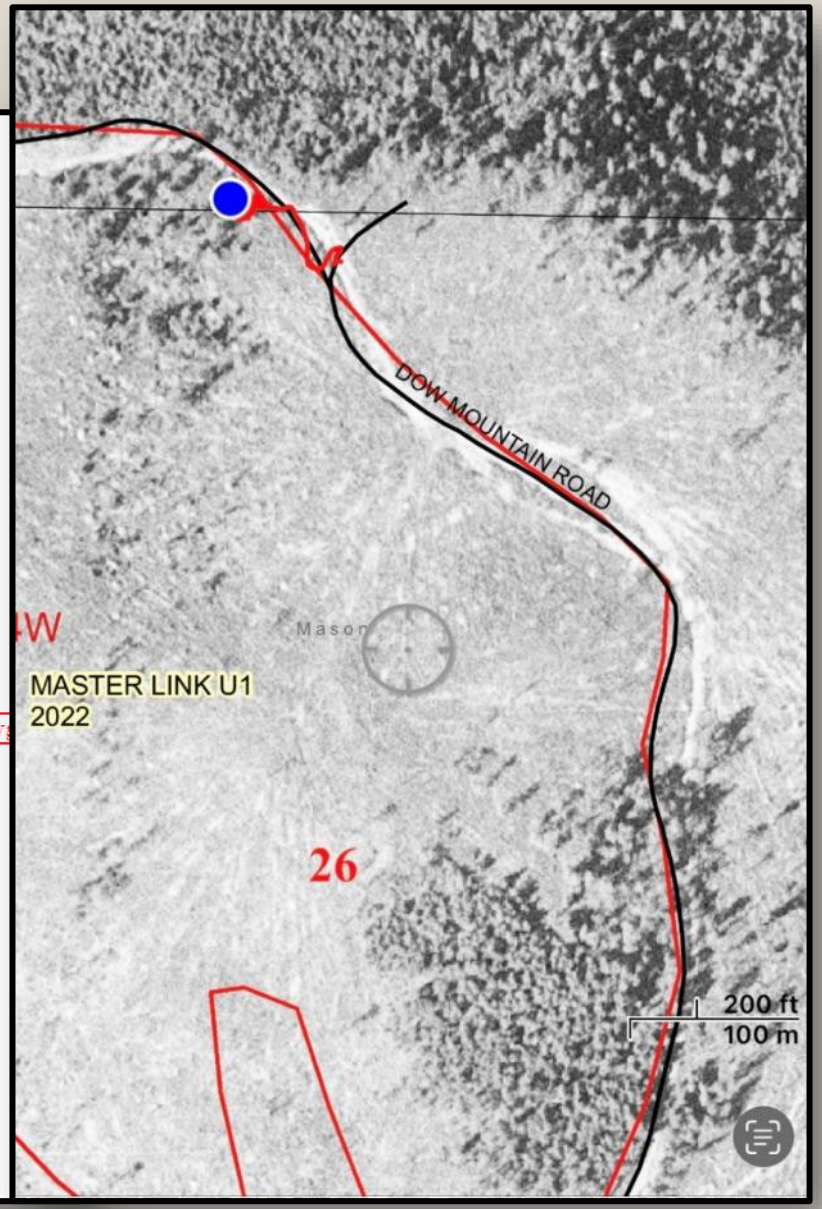
Field Work in an Assessment

Create geo-referenced maps.



Field Work in an Assessment





Field Work in an Assessment

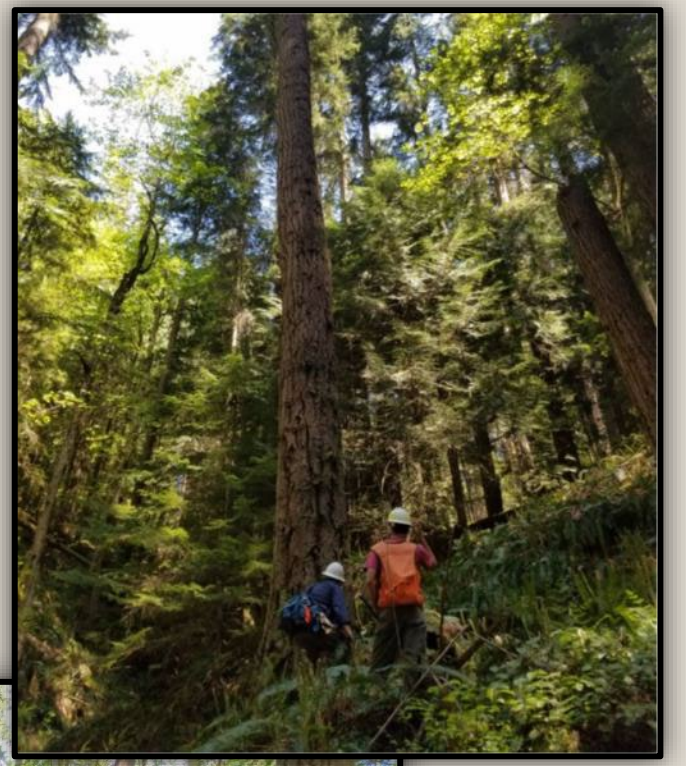
Visit WOGHI points

Walk, walk, walk the stand (spatially thorough)

Evaluate stand for:

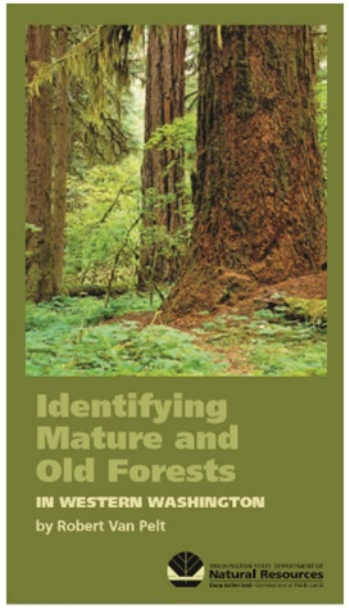
- Structural development
- Pre-1850 age
- Acreage

old-growth definition



Field Work in an Assessment

Evaluate Structural Development



Utilize the Stand Development in Western Washington Key *(Van Pelt 2007)*

Key to Stand Development Stages in Western Washington for Western hemlock, Sitka spruce, and Pacific silver fir zones.

While this key has been tested in a wide variety of stands in western Washington, there may exist stands that do not key out properly. In these situations, relax the percentage values slightly and retry.

1. Cut stumps present throughout stand 2
   No cut stumps . . . . . Natural forest*. 3
2. Stumps cut by chain saw (short stumps – planted seedlings) 3
   Stumps cut by hand saw (tall stumps, springboard notches – naturally reseeded) 3
3. Legacy trees – trees considerably older/larger than the others, or a subset of trees with charcoal on bark present. 4
   No legacy trees 6
4. Legacy trees < than 20 % canopy cover. . . . . Stand with legacies 6**
   Legacy trees ≥ 20 % canopy cover . . . . . Two cohort stand 5
5. Each cohort must be keyed out separately
   Older cohort 10
   Younger cohort 6
6. Douglas fir (live or dead) ≥ 25 % of main canopy stems 7
   Douglas fir < 25 % of main canopy stems 15
7. Young, planted Douglas fir trees < 10 years old. **Cohort establishment phase**
   Not as above 8
8. Young, planted Douglas fir trees 5-20 years old, abundant shrub cover . . . . . **Canopy closure**
   Not as above 9
9. Douglas fir trees, not yet overhead, overlapping crowns, shrubs present ≥ 15 % . . . . . **Canopy closure**
   Not as above 10
10. Douglas fir canopy overhead, self pruning, scant understory . . . . . **Biomass accumulation/stem exclusion**
    Not as above 11

11. Douglas fir overhead, self pruning; western hemlock, western redcedar, or Pacific silver fir present only in understory . . . . . **Maturation I—Forests originating after Euro-American settlement*****
    Not as above 12
12. Douglas fir overhead, epicormic branches present, western hemlock, western redcedar, or Pacific silver fir seedlings, saplings, or small poles present, yet no main canopy trees . . . . . **Maturation II — Forests originating before Euro-American settlement*****
    Not as above 13
13. Douglas fir upper canopy, western hemlock, western redcedar, or Pacific silver fir abundant and in many height classes, including main canopy . . . . . **Vertical diversification**
    Not as above 14
14. Douglas fir canopy patchy, large canopy gaps present, western hemlock, western redcedar, or Pacific silver fir abundant in all canopy levels . . . . . **Horizontal diversification**
    All Douglas fir trees dead (snags or logs), western hemlock, western redcedar, or Pacific silver fir abundant in all canopy levels. . . . . **Pioneer cohort loss**
15. Sitka spruce, noble fir, or red alder ≥ 25 % of main canopy stems . . . . . **use steps 7-14, replacing Douglas fir with Sitka spruce, noble fir, or red alder**
    Sitka spruce, noble fir, or red alder < 25 % of main canopy stems . . . . . **use steps 7-14, replacing Douglas fir for western hemlock, western redcedar, and Pacific silver fir collectively******

* Certain areas in the Puget Basin were cleared of stumps during the early days of Euro–American settlement. While very few of these cleared areas have been reconverted to forests, the occasional stand may be encountered.

** For Douglas fir legacies, see the Rating System for Aging Legacy Trees on page 64. For Sitka spruce, western hemlock, or western redcedar legacies, use visual indicators under their individual sections.

*** Key was written in 2007. While stands keying out to Maturation I and II will be valid in any year, their relation to Euro-American settlement will not.

**** The horizontal diversification stage in this sequence is equivalent to the pioneer cohort loss stage of both the Douglas fir and Sitka spruce sequences.

Stand Development in Natural Douglas Fir Forests

Figure 20

Cohort Establishment

After Wildfire

After Blowdown

After Clearcutting

Figure 24

Biomass Accumulation/Competitive Exclusion

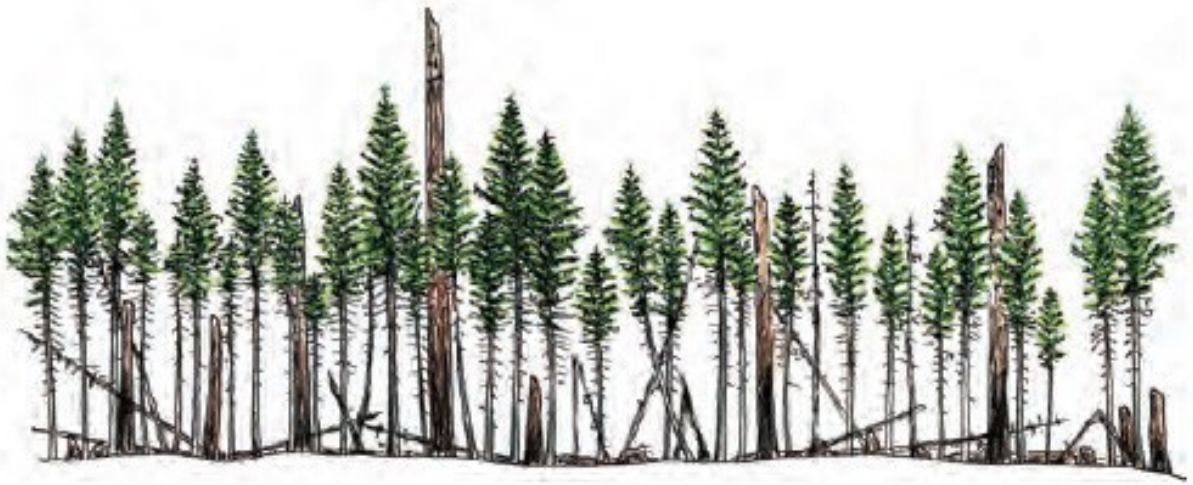



Figure 25
Maturation I: Pre-Euro-American settlement


Figure 27
Maturation II: Pre-Euro-American settlement

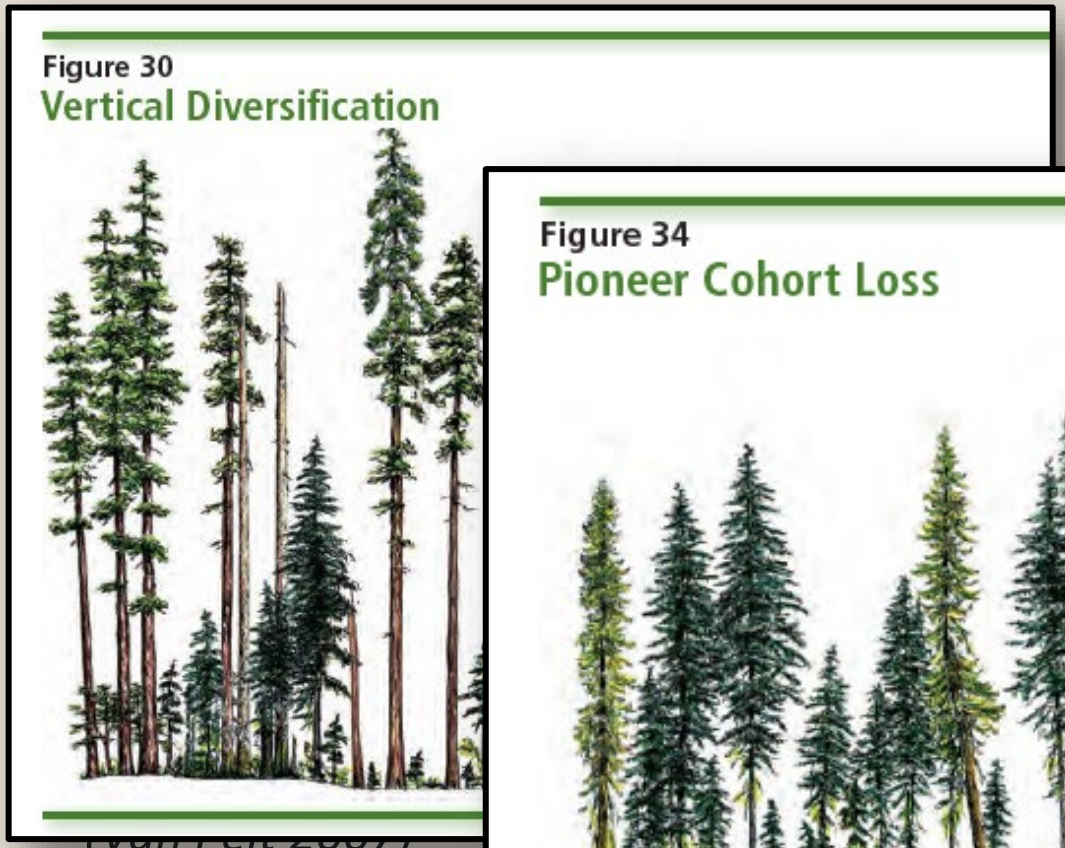


Figure 30
Vertical Diversification

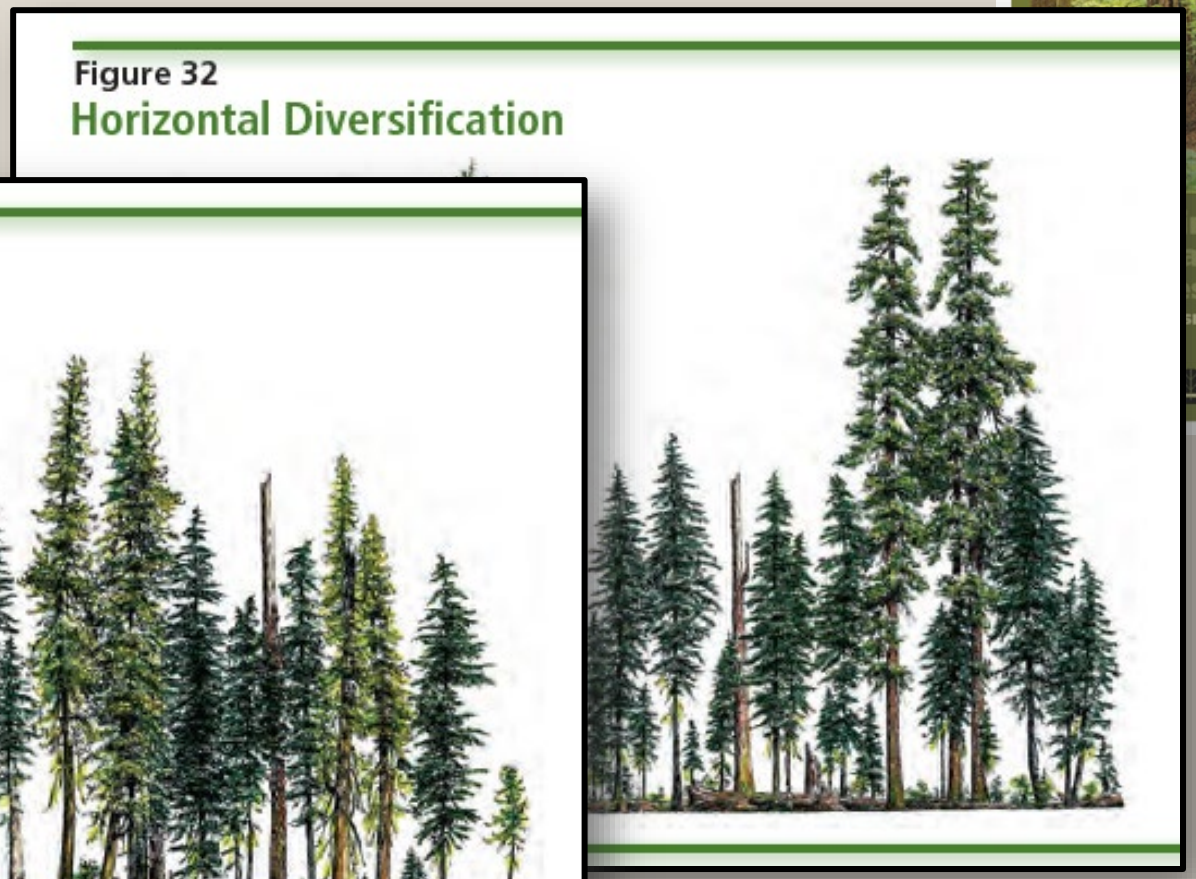


Figure 32
Horizontal Diversification

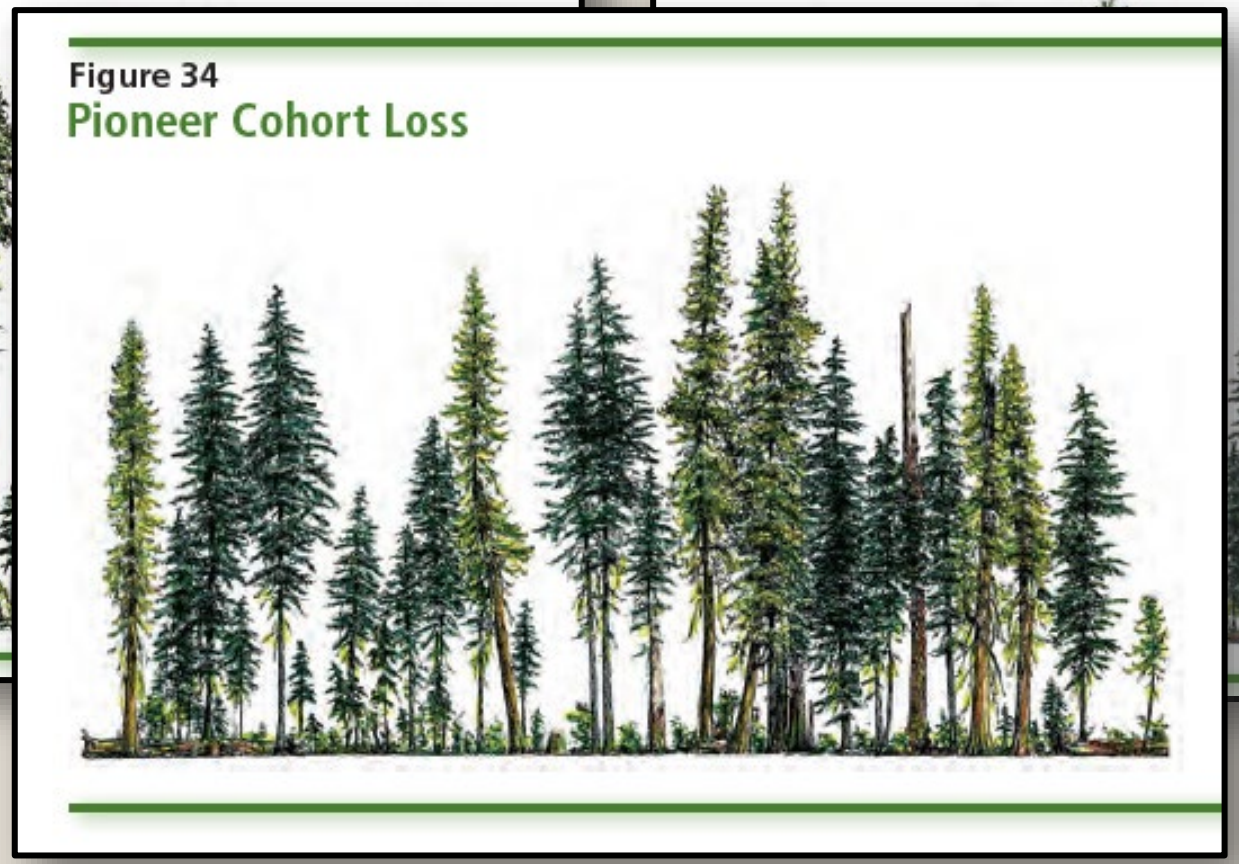


Figure 34
Pioneer Cohort Loss

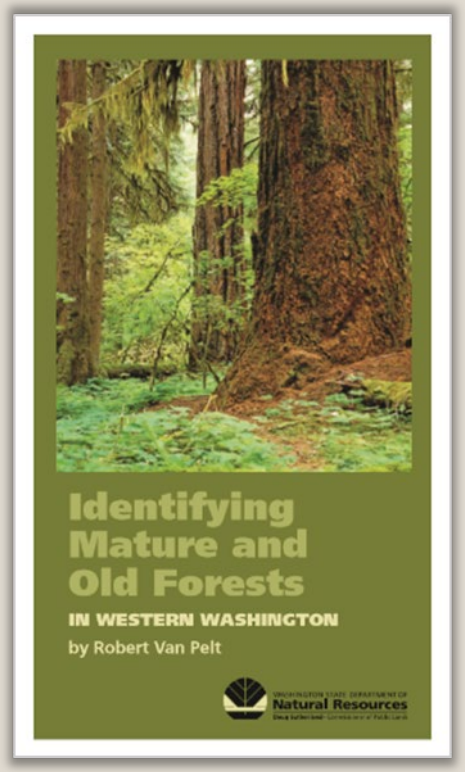

Natural Resources

Field work in an assessment

- Stand Origin Assessment

- Individual Tree Age Score Key

(Van Pelt 2007)



Rating system for determining general age of Douglas fir legacy trees

Choose one score from each category and sum scores to determine developmental stage

Bark condition, lower one-third of tree	Score
Hard, boney bark with small fissures	0
Hard bark with deep fissures	1
Hard bark with charcoal present	2
Soft, flaky bark with deep fissures	2
Flaky bark with charcoal present	3
Knot indicators, lower one-third of tree	
Branch stubs present	0
Old knot/whorl indicators visible	1
No knot/whorl indicators visible	2
Lower crown indicators	
No epicormic branches	0
Small epicormic branches present	1
Large and/or gnarly epicormic branches present	2

Scoring Key

< 2	Biomass accumulation/stem exclusion (35–80 years)
2–3	Maturation I – Forests originating after Euro-American settlement (70–160 years)
4–5	Maturation II – Forests originating before Euro-American settlement (140–240 years)
> 5	Old-growth (210+ years)

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Lower bark texture and char

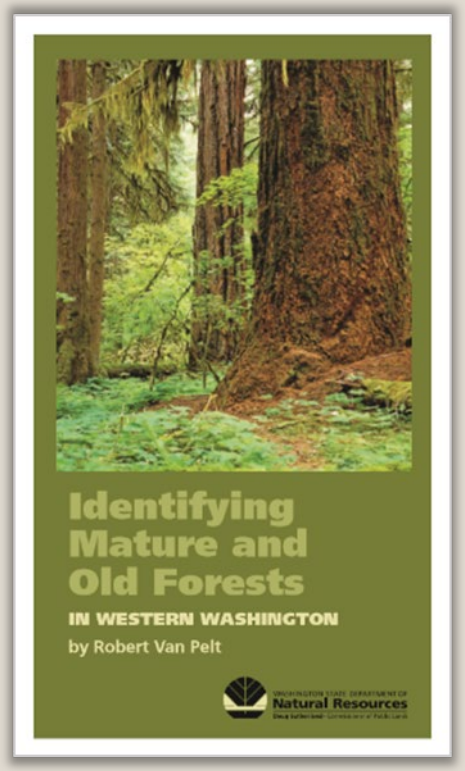

Lower branch indicators


Epicormic branching

Field Work in an Assessment

- Stand Origin Assessment

- < 2 Biomass Accumulation/Stem Exclusion
- 2-3 ..Maturation I
- 4-5… Maturation II
- >5… Old-Growth



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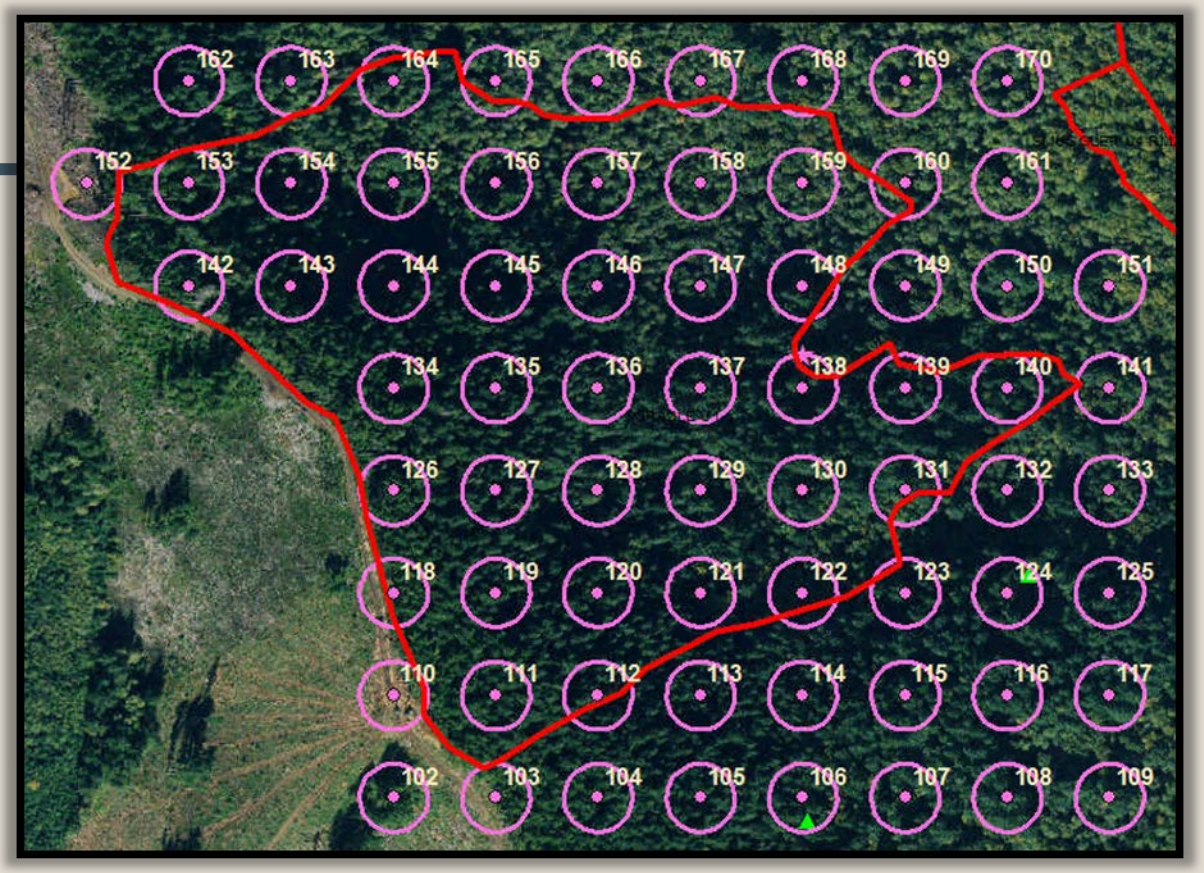
Field Work in an Assessment

- When close to an1850 stand age?

Field Work in an Assessment

- When close to an 1850 stand age?
- If necessary, Intensive Plot Grid Coring
  - Minimum 10 cores
  - Can be >50 cores
  - Extra levels of statistical rigor when pre-1850 call is less certain initially.



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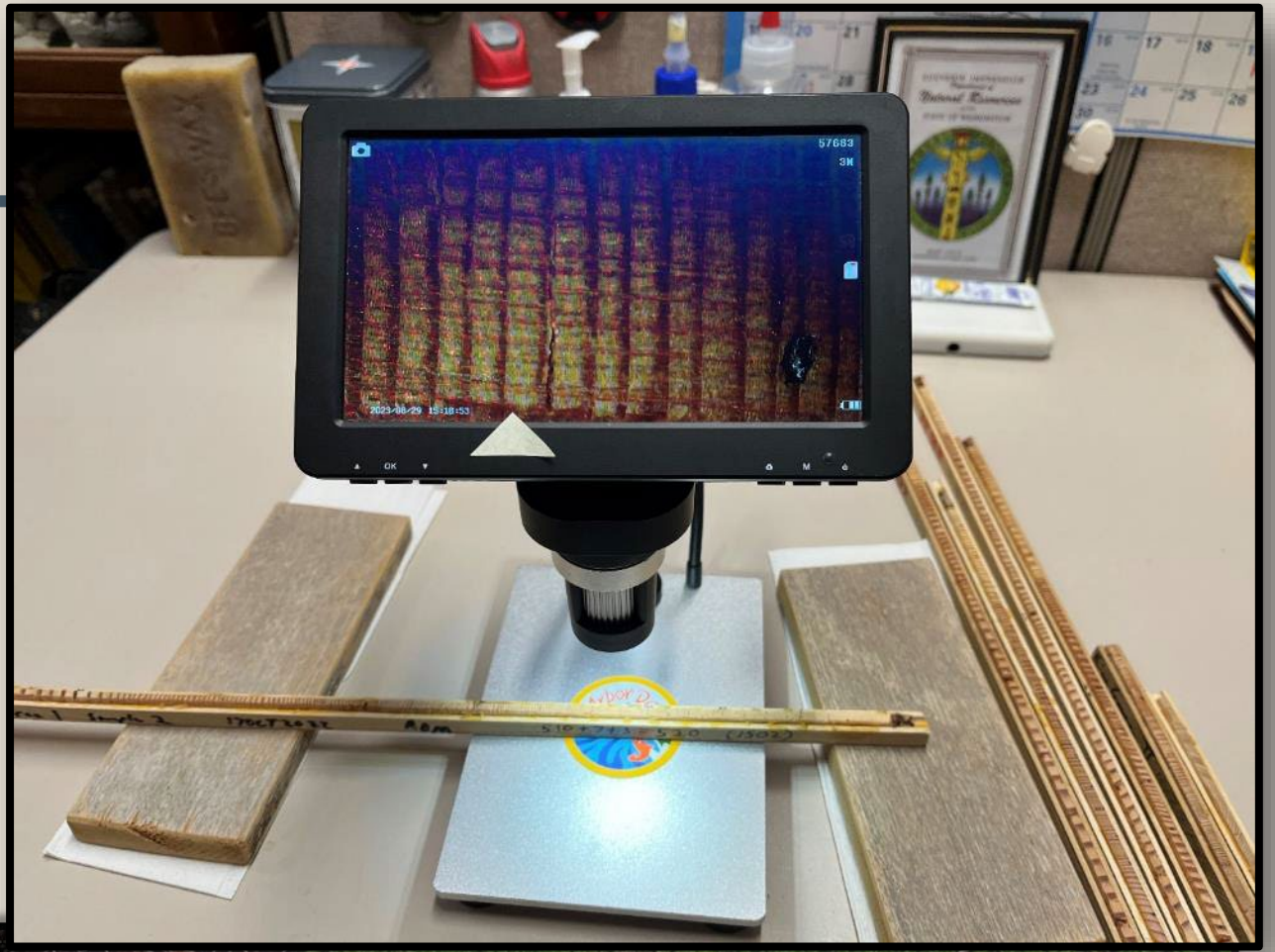

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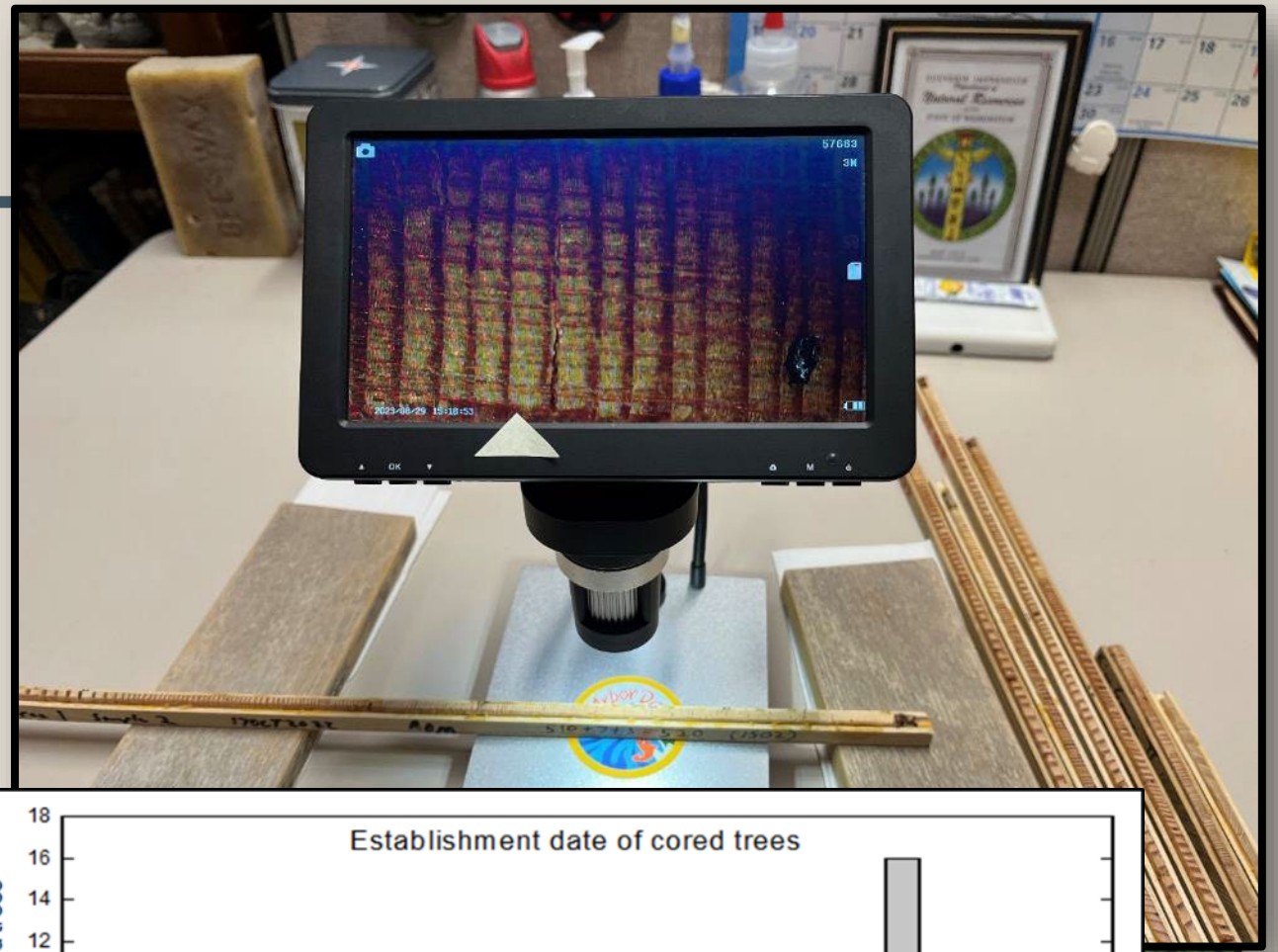

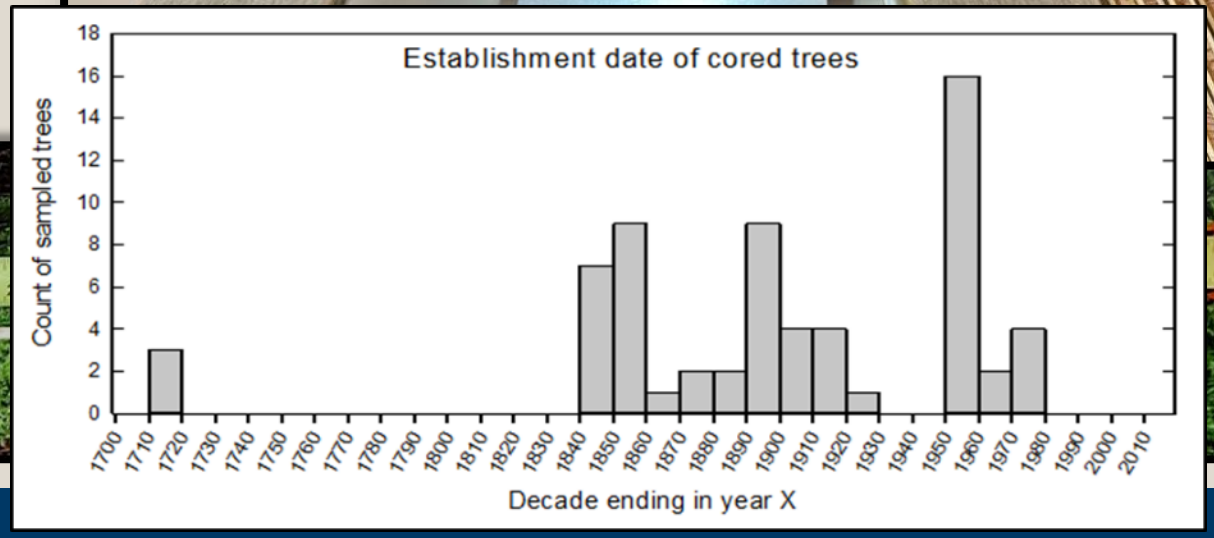

Some outcomes are simple…

Clearly NOT Old Growth → **Clearly Old-Growth**

Some are challenging…

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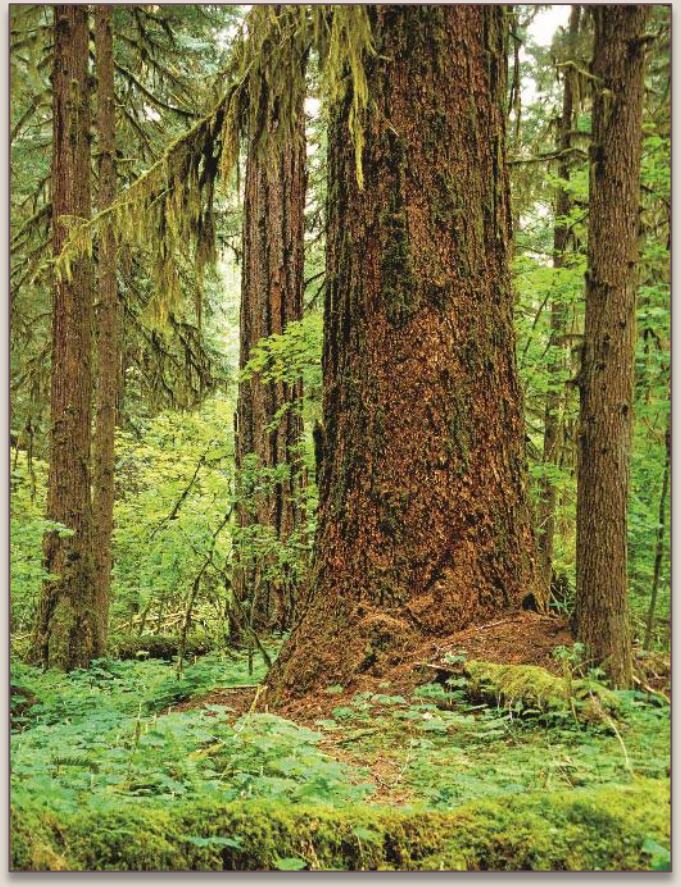

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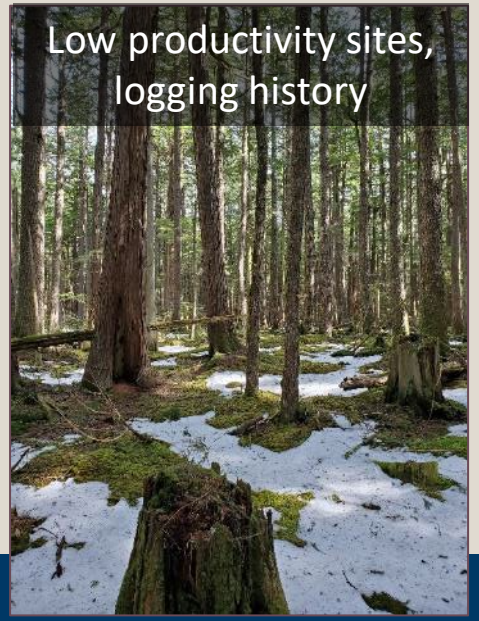

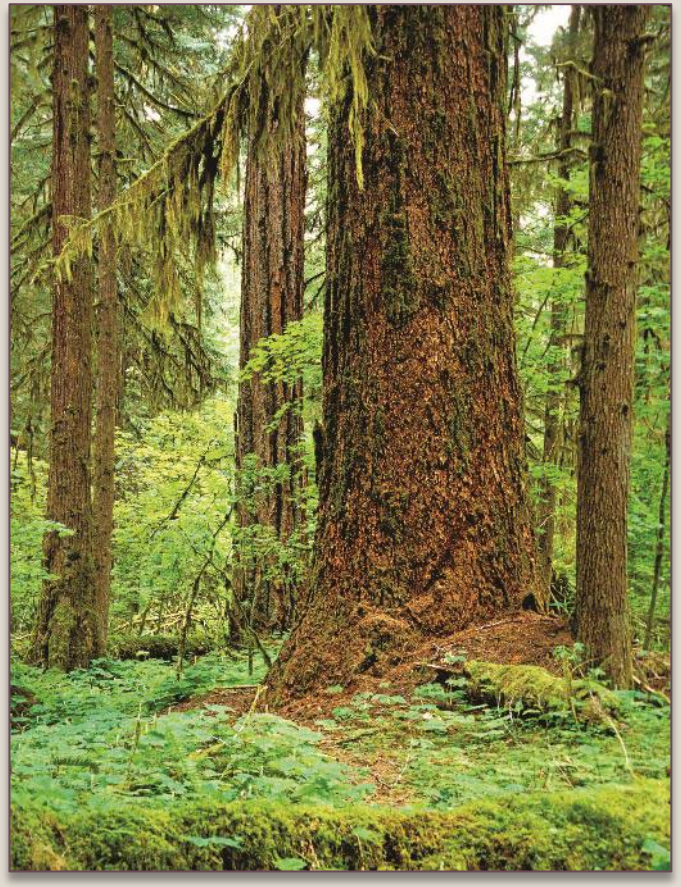

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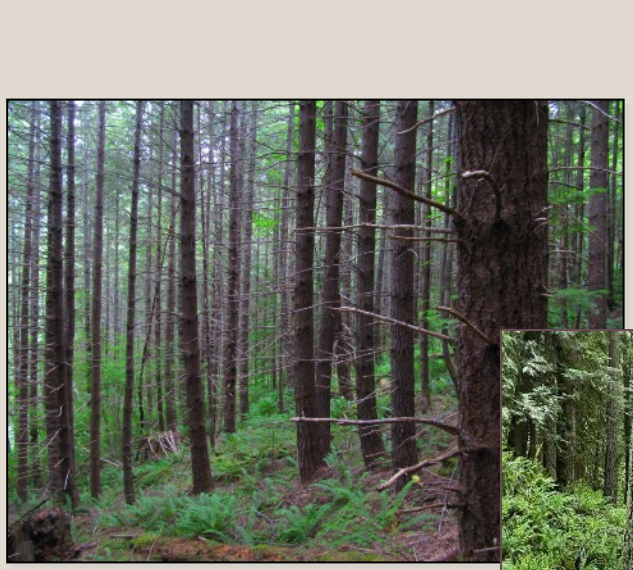

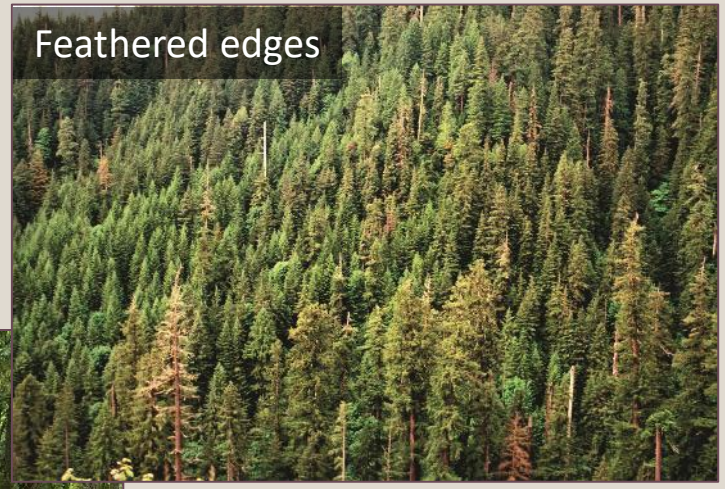

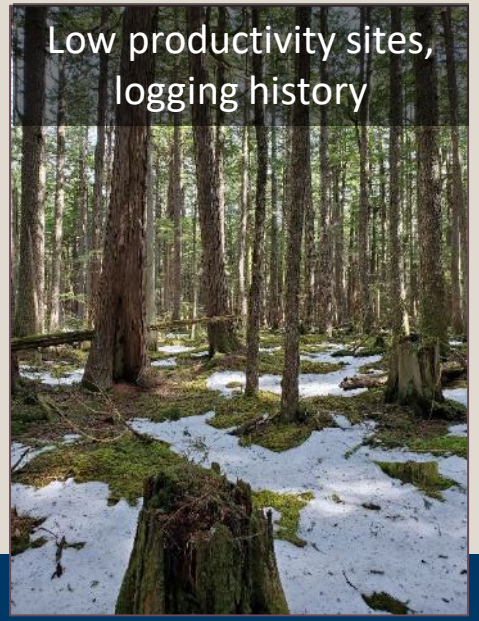

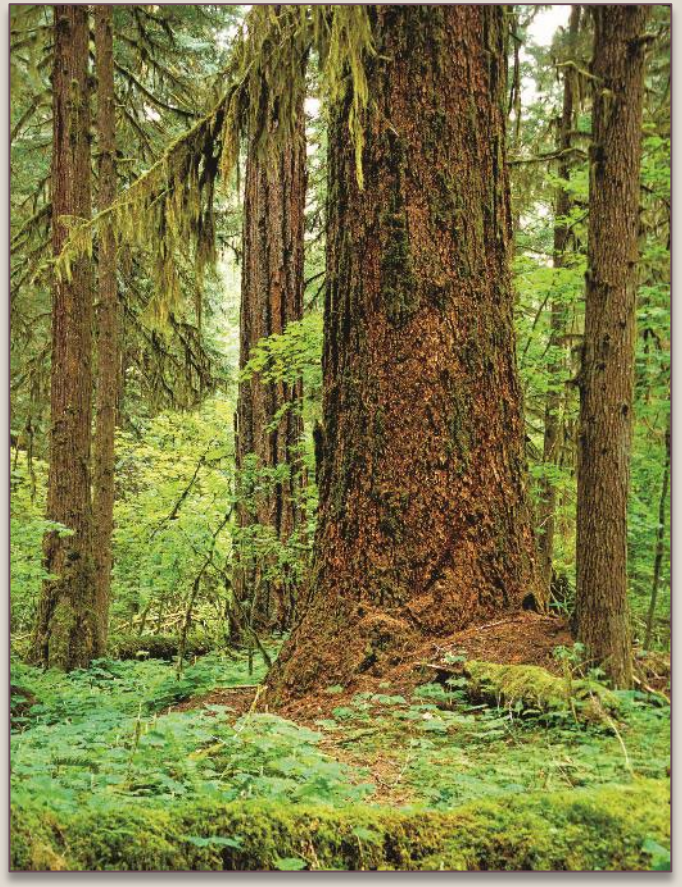

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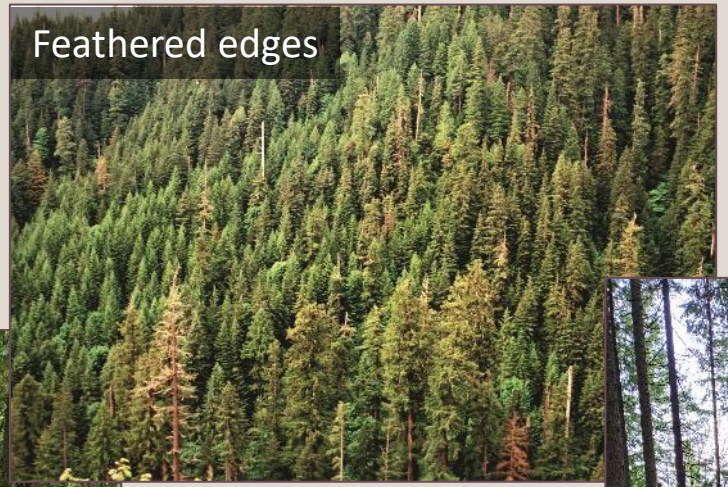
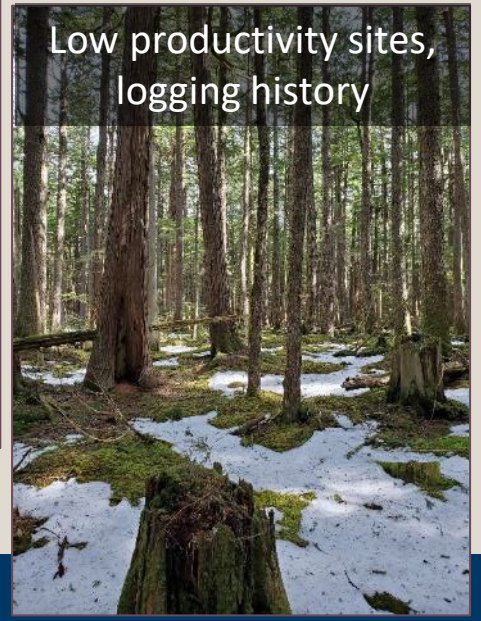




Documented on an Assessment Form

WADNR WEST SIDE OLD GROWTH ASSESSMENT

June, 2007

1. BATCH COVER SHEET TABLE

Older Forest Batch_Id	Primary Twn-Rge-Sect		Name of Assessor	Exam Date	Number Sample Points Visited	Number Old Growth Polys Created	Number LULC FIUs Visited
OF_batch_id	*Pri_township*	*Pri_sect*	*Assessor_name*	*Exam_date*	*num_spt_visit*	*num_OGpolys*	*num_lulc_visit*
020274-07062015	T03R04E	13	Sirrine, Doug	*07/06/2015*	6	2	x

Sale name: Moonster	Access notes: Sale is accessed from the L-1200 to L-1210, to L-1211. A single gate is located on the L-1210 and can be accessed with a PCP1 key.

Opt. #1: Describes Old Growth Polygon		*Opt. #2: Describes FRIS Sample Point*				*Opt. #3: Describes LULC FIU*	
Old Growth Polygon Id	020274_2	**RIU Id**	020274	**Spt No**	xxxx	**Lulc Riu_Id**	xxxxxx
OG_poly_id		*Riu_id*		*spt_no*		*Lulc_riu_id*	

5a. Large Tree Characteristics (*largetree_narr*):

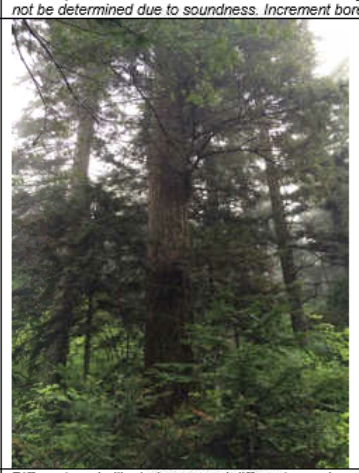
Old-growth Douglas-fir trees dominate this stand (see IMG_0276), comprising >20% of the canopy cover. Trees are 50+ inches in diameter, have hard bark with deep fissures, no knot indicators on the lower bole, large epicormic branches, and dead tops. These large trees are evenly distributed throughout the delineated polygon.

5b Snag Characteristics (*snag_narr*):

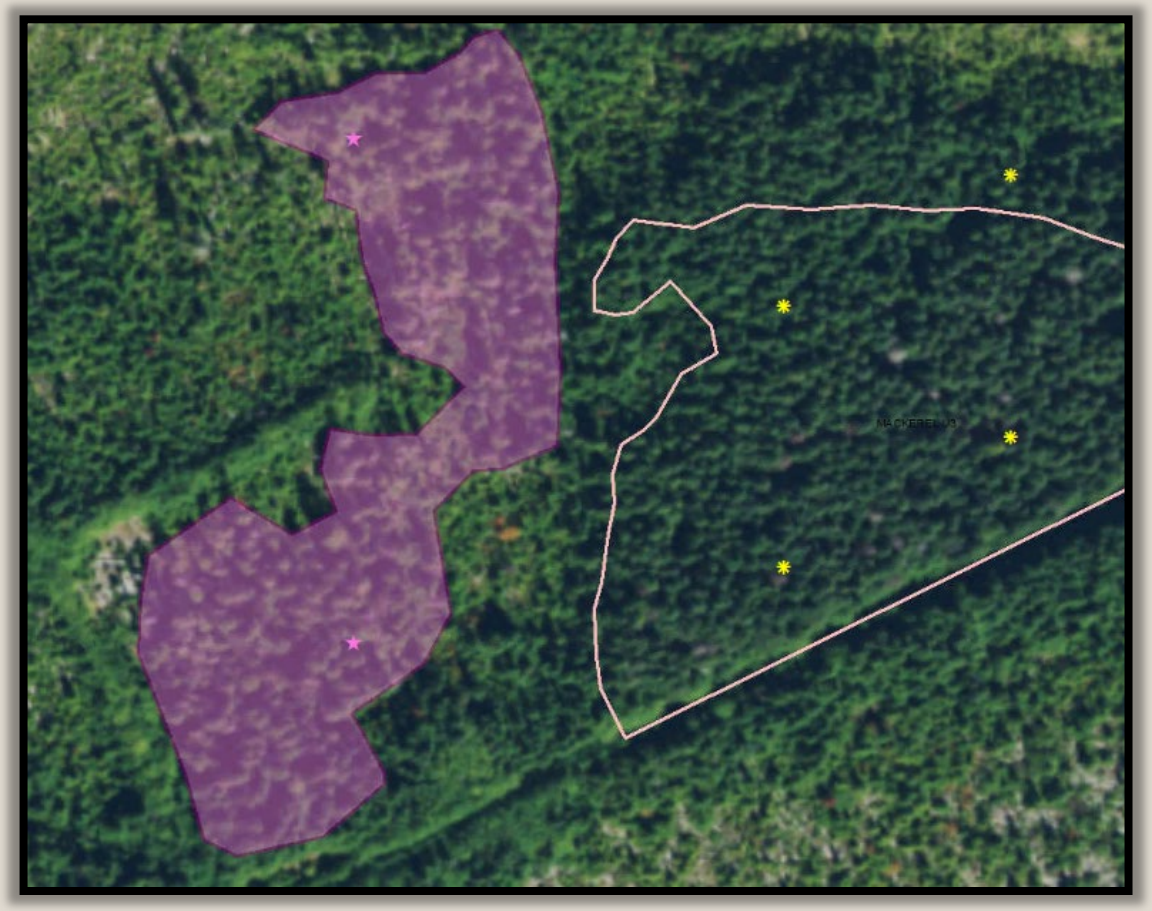
Very few snags exist on the site. Snags that do exist are from a younger cohort and are a result of competitive exclusion or damage done by a bear.

5c. Down Wood Characteristics (*downwood_narr*):

Down wood amounts are below average for the Larch landscape. No evidence of snagging that occurred after the Yacolt Burn was present

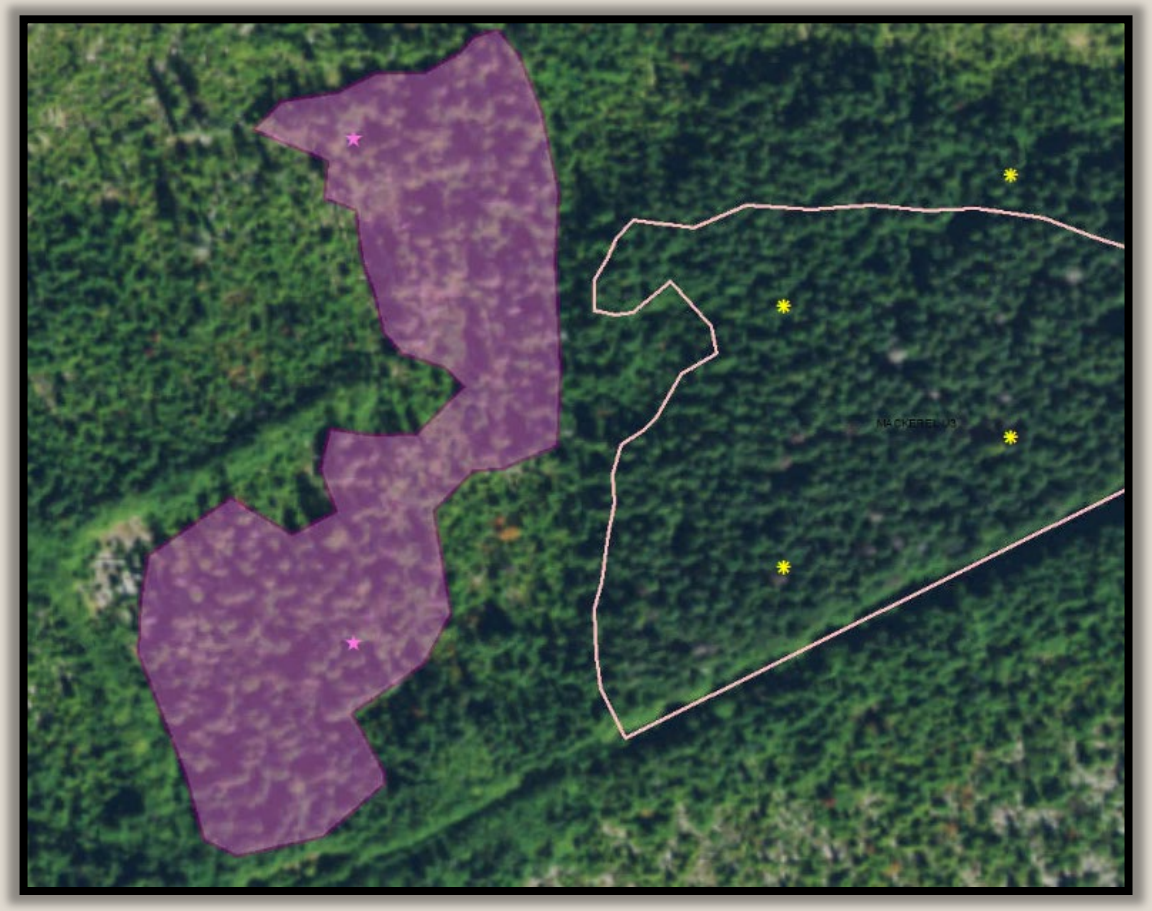
pt_no	LULC Riu_Id *Lulc_riu_id*	Photo Temp. File Name *photo_id_temp*	Photo Description (above), Photo (below): *photo_descript*
		IMG_0263	*Photo occurs on the lower portion of 020274_1. Large epicormic branches and deep bark fissures evident on this remnant Douglas-fir. Exact age could not be determined due to soundness. Increment borer indicated pre-1850.*
			
		IMG_0265	Different angle illustrates several different age classes of Pacific silver fir and the heavy brush component on some areas of the site.
			

Outcomes



1. When an assessed area meets <u>all</u> old-growth policy criteria
   - ➡ The stand is delineated and deferred from harvest

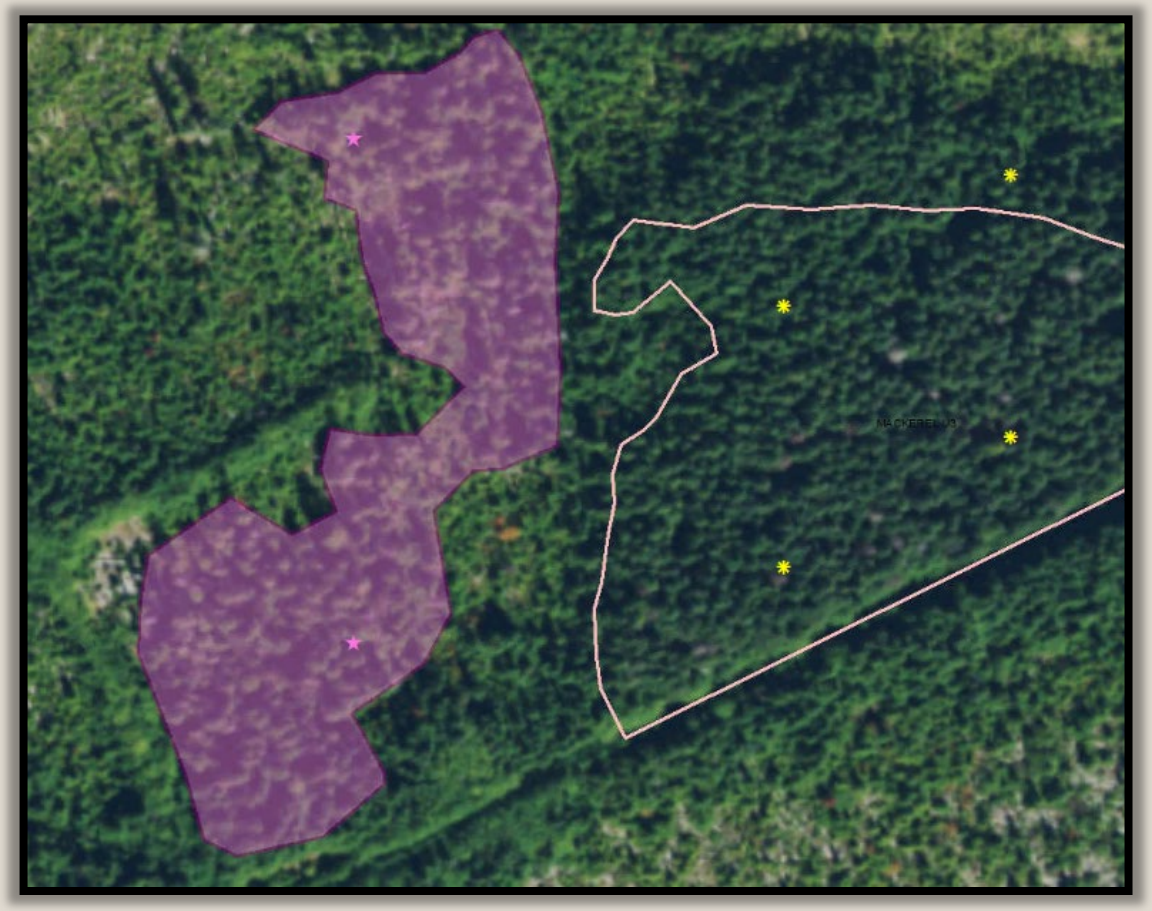
Outcomes



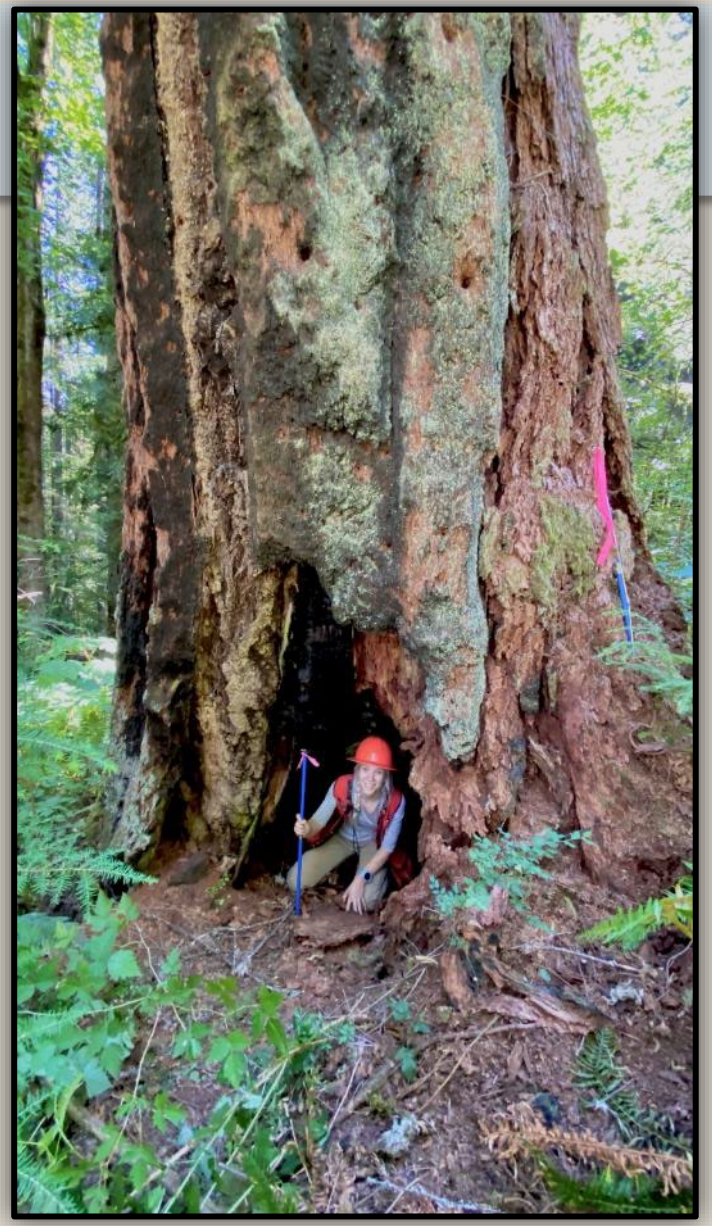
1. When an assessed area meets <u>all</u> old-growth policy criteria
   - ➡ The stand is delineated and deferred from harvest

2. When old trees or small patches with old-growth components are present, but less than 5 acres
   - ➡ Not an OG stand deferral
     BUT, trees/patches emphasized for retention under different procedures.

Outcomes



1. When an assessed area meets <u>all</u> old-growth policy criteria
   - ➡ The stand is delineated and deferred from harvest
2. When old trees or small patches with old-growth components are present, but less than 5 acres
   - ➡ Not an OG stand deferral
     BUT, trees/patches emphasized for retention under different procedures.
3. When no old-growth components present
   - ➡ Activity proceeds, standard per HCP



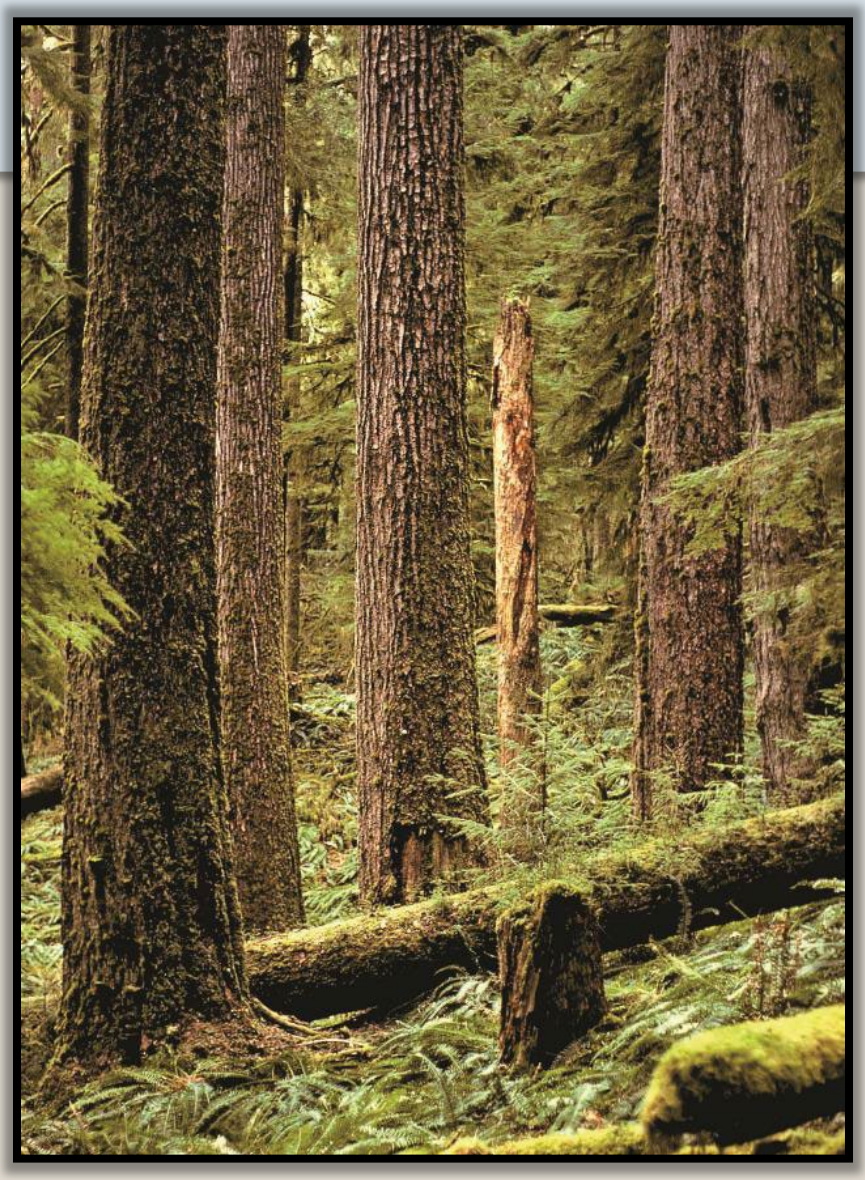
A Summary of Old-Growth Field Assessments

Old-Growth Assessments completed to date in Western Washington…

- 320 field assessments
- 1,700 points assessed

2,450 acres in 91 Old-Growth stands protected.

Are there other old-growth stands on DNR lands?



Old-Growth Field Assessment Summary

Yes, there are areas yet to be evaluated and lands already in conservation status.

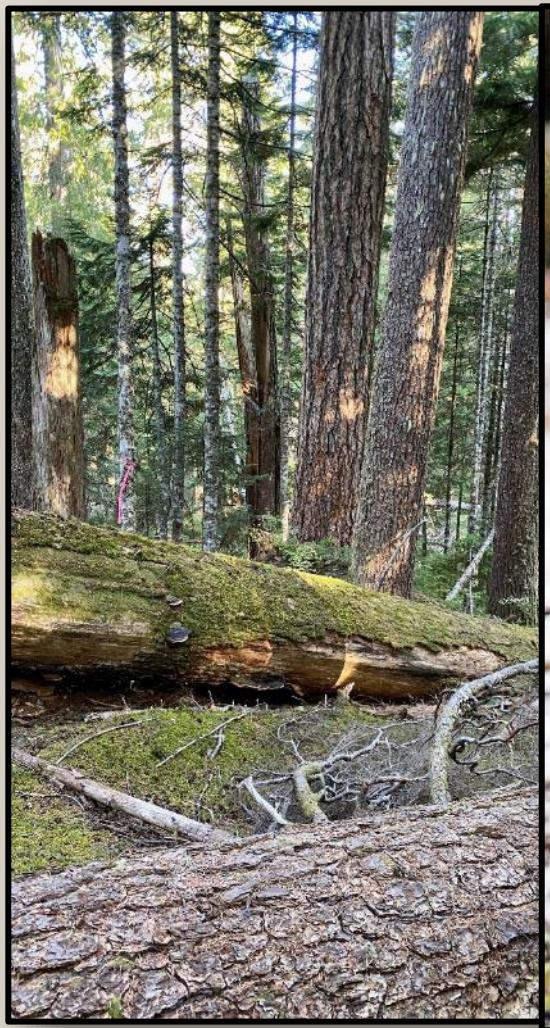
Areas yet to be evaluated

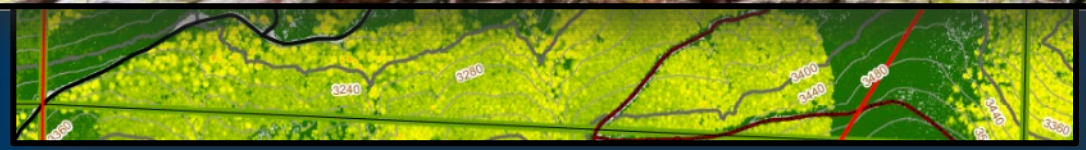
- WOGHI points needing assessment

Permanent conservation status

- Marbled Murrelet Long-Term Conservation Strategy
- Northern Spotted Owl Long-Term Conservation Strategy
- Riparian and Wetland Management Zones
- Natural Area Preserves (NAPs) and Natural Resource Conservation Areas (NRCAs)

Wolf Creek, Black Diamond Unit, King County

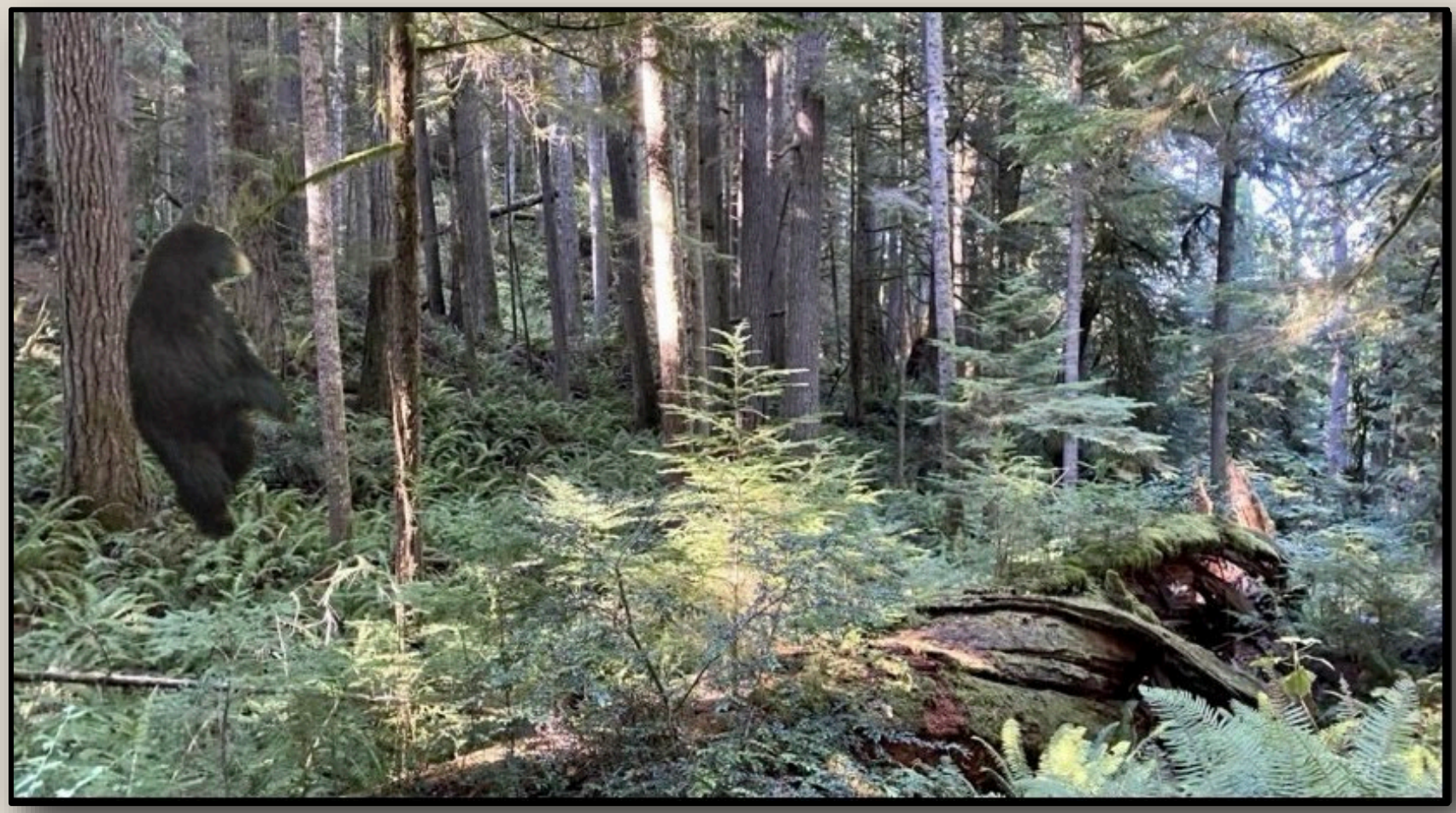




Wolf Creek, Black Diamond Unit, King County

The Kitsap NAP and Stavis NRCA, Kitsap County

The Kitsap NAP and Stavis NRCA, Kitsap County



Thank you, questions?


WASHINGTON
DEPARTMENT OF NATURAL RESOURCES