Columbia Land Trust

CONSERVING THE NATURE YOU LOVE

TRIAL AND ERROR: OAK THINNING OUTCOMES AT DILLACORT CREEK NATURAL AREA

Lindsay Cornelius

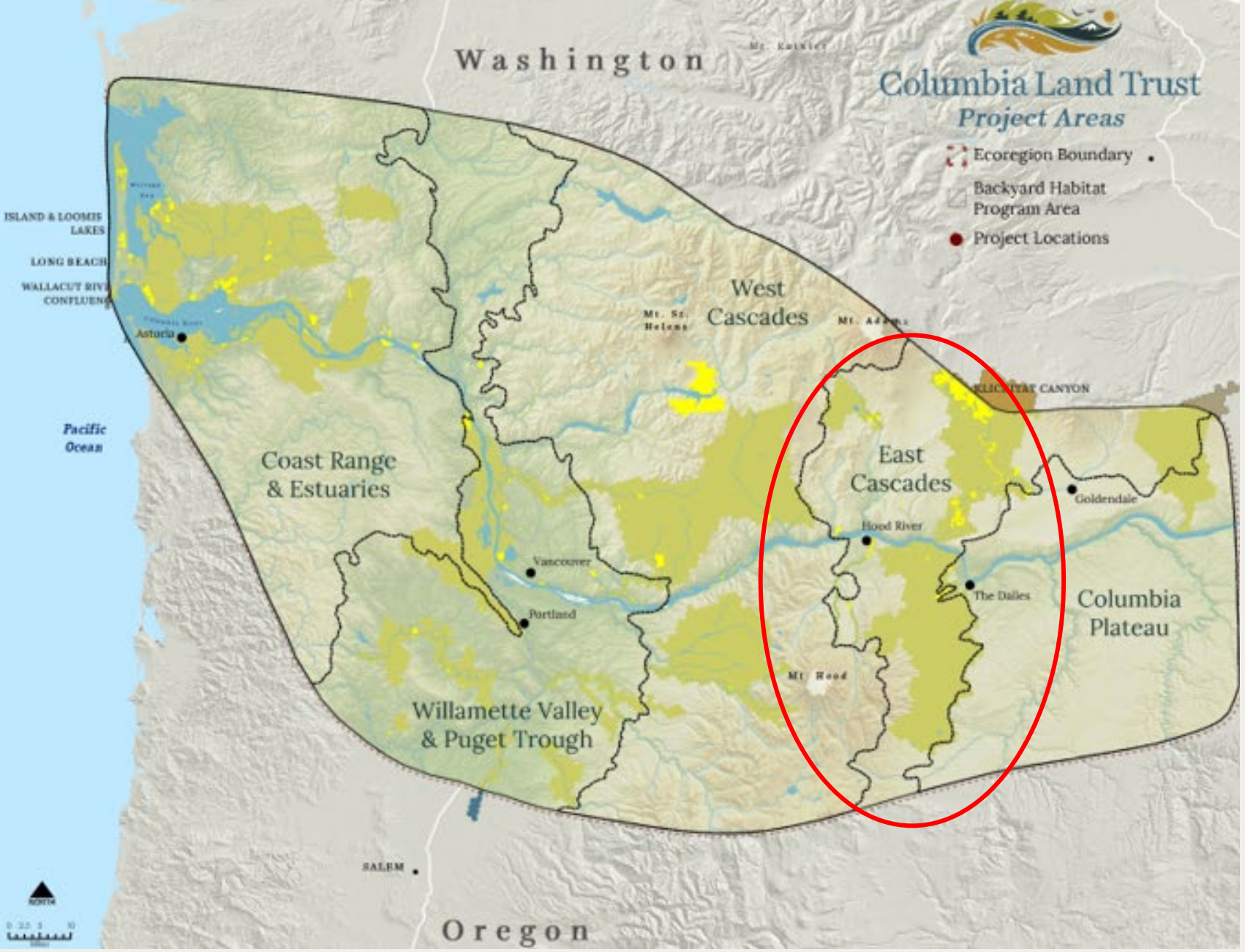
East Cascades Oak Partnership Manager

CPOP Conference 11/10/22

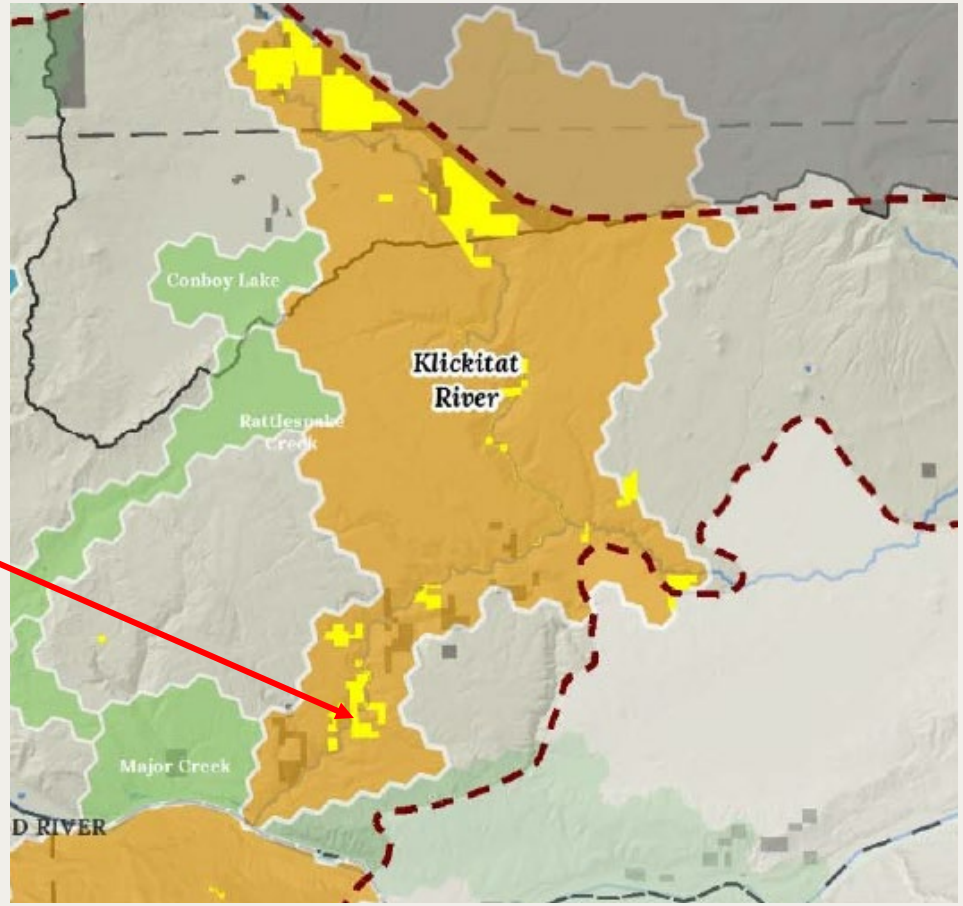
5 Ecoregions of the Lower Columbia

Conserved lands

Conservation areas

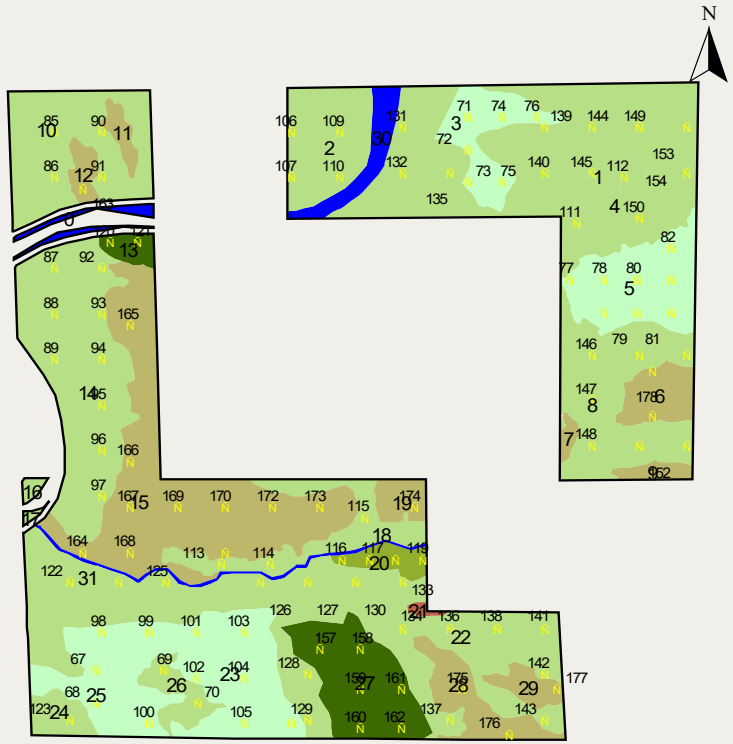


Dillacort Creek Natural Area

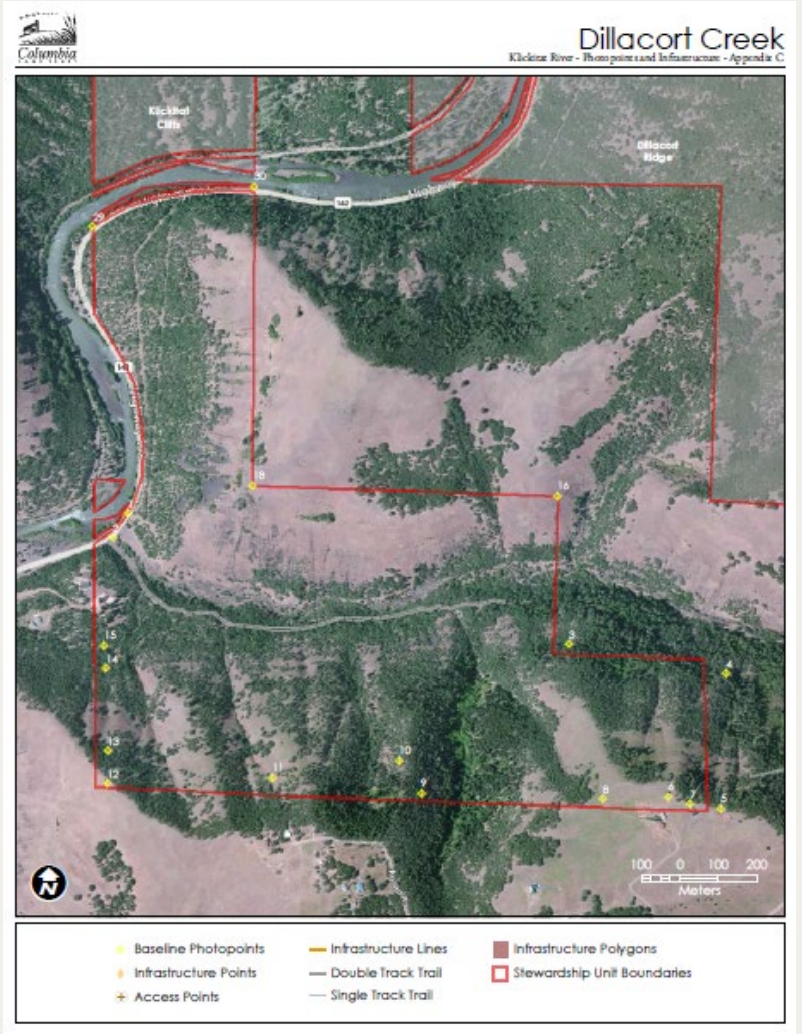


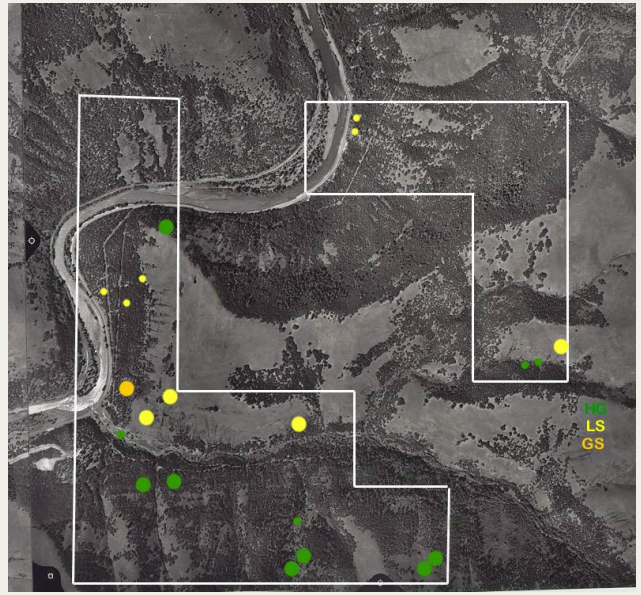
Oregon white oak in the East Cascades

Klickitat Oaks Enhancement Project – Current Condition, Project Design

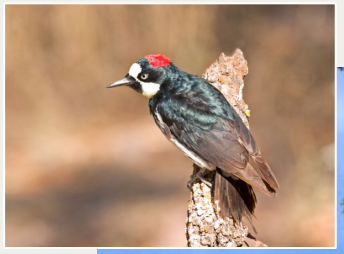


Major Vegetation Types at Dillacourt Property





Restoration Goals & Objectives



Oregon white oak woodlands are intact and functional, resistant to high intensity fire, and provide habitat for priority species

Project Objectives:

Improve both mast production and wildlife cavity resources in oaks

Increase light levels to understory forbs

Reduce abundance of ladder and fine fuels

Increase coarse wood in larger diameter size classes

Balance maintenance and restoration of habitat conditions for western gray squirrels with fire objectives

Dillacort Creek

Pre-treatment condition

Dillacort Creek

Post treatment condition in mechanical treatment areas (before slash disposal)

Dillacort Creek

Pre and post treatment condition in hand treated areas

Coarse wood inputs

Retain more trees in the draws

Untreated areas

Higher density and more pine
on west-facing aspect

Mature ponderosa pine trees released from competition/ladder fuels; reduction in leaf litter recruitment

Tree response observed:
epicormic branching

Evaluating the Effectiveness of Restoration Treatments to Enhance Oregon White Oak Systems within the Klickitat River Watershed

Kara Caselas
Masters of Environmental Management
Portland State University
June 8, 2018

Restoration Objectives:

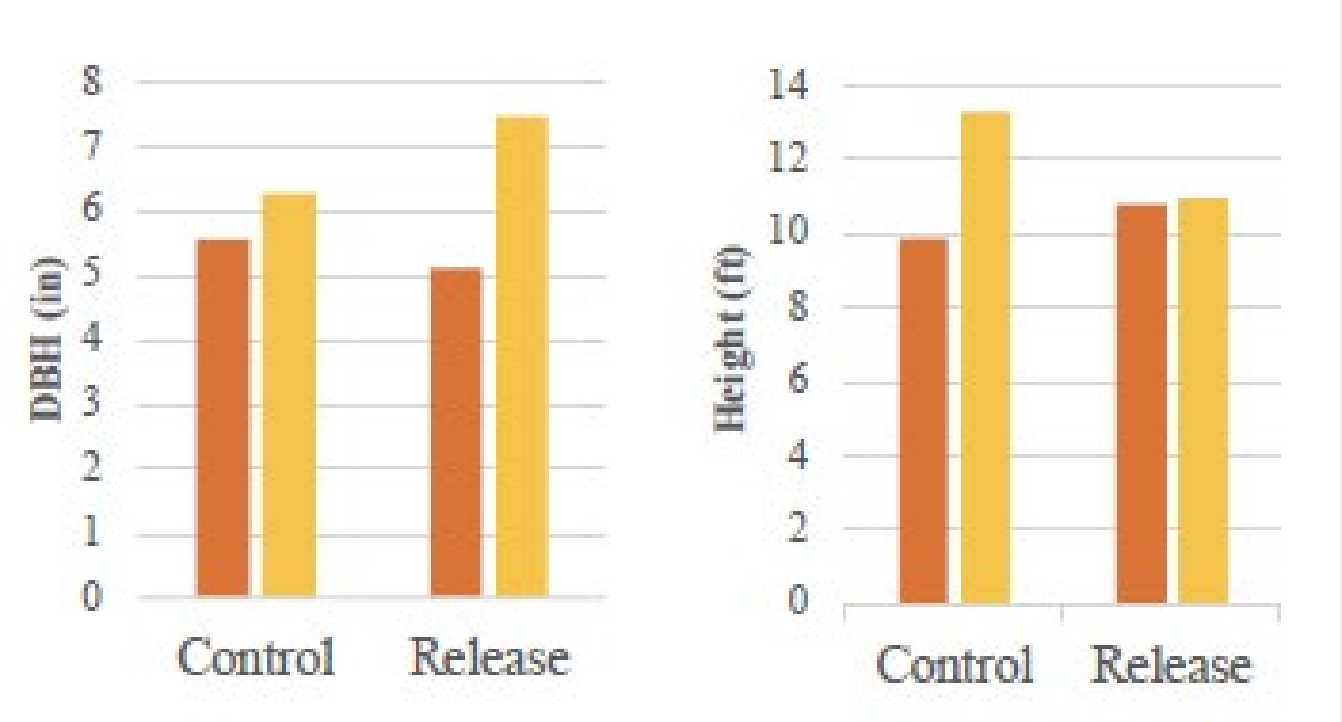
- Improve both mast production and wildlife cavity resources in oaks;
- Reduce the risk of high severity/intensity fire and subsequent loss of oak systems, and allow reintroduction of historic fire regimes;
- Increase downed wood levels of larger diameter boles, while aggregating coarse wood and keeping at levels that do not contribute to crown fire behavior; and,
- Balance maintenance and restoration of habitat conditions for Western gray squirrels, with fire regime objectives mentioned above.

Effectiveness Monitoring Key Questions:

1. How did treatments impact oak growth, canopy structure and regeneration?
2. Are there variables that can determine the predictability of stump sprouting post-treatment and do these variables differ for stumps in clumps?
3. How did the treatments affect fuel loads?
4. How did the treatments affect the abundance and quality of habitat features, such as snags and coarse woody debris?

Effectiveness Monitoring: Average height and diameter

- Not statistically significant
- HEIGHT: Control group increased 4.12 ft on average, release (no change)
- DIAMETER: Control group increased 3.37%, treatment 10.87%



Effectiveness Monitoring: Seedling and Sapling Density

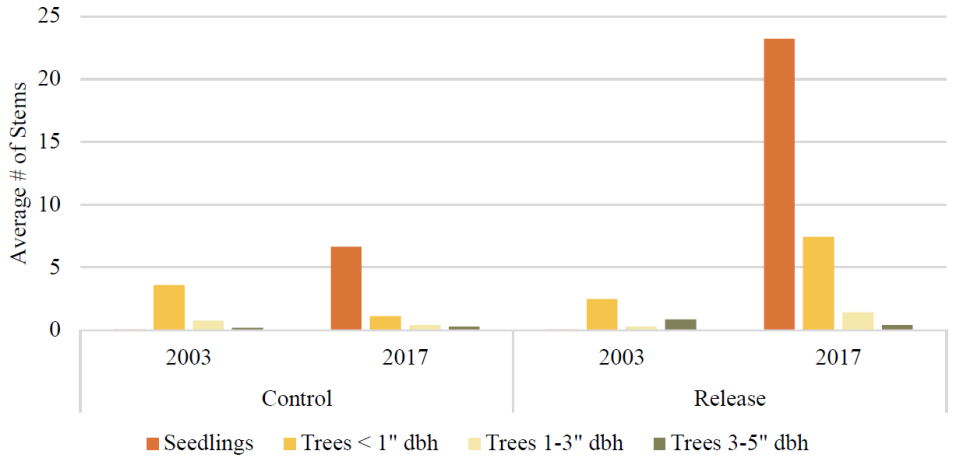
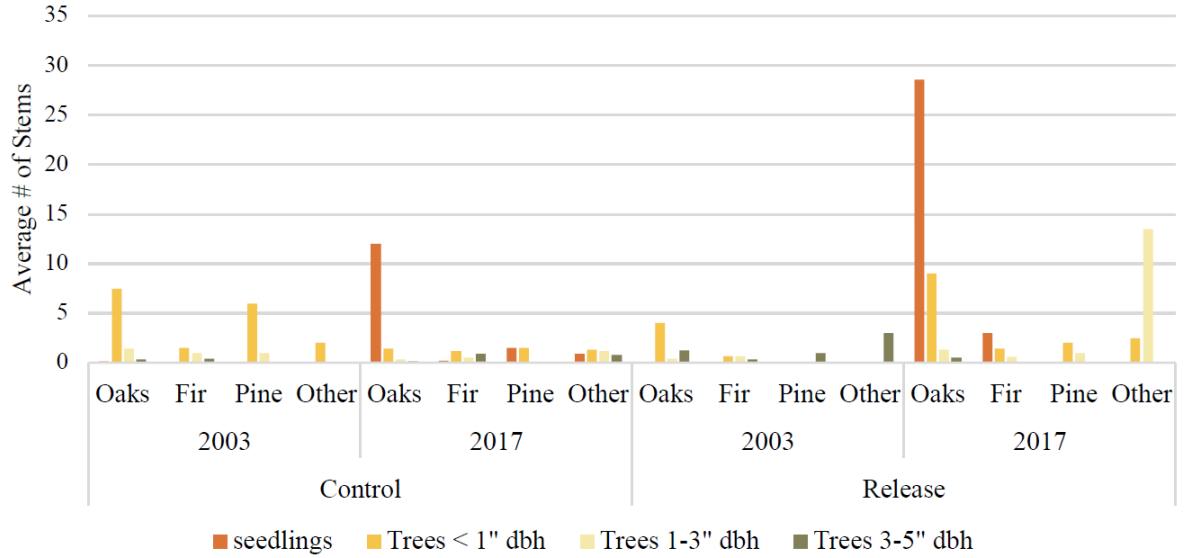
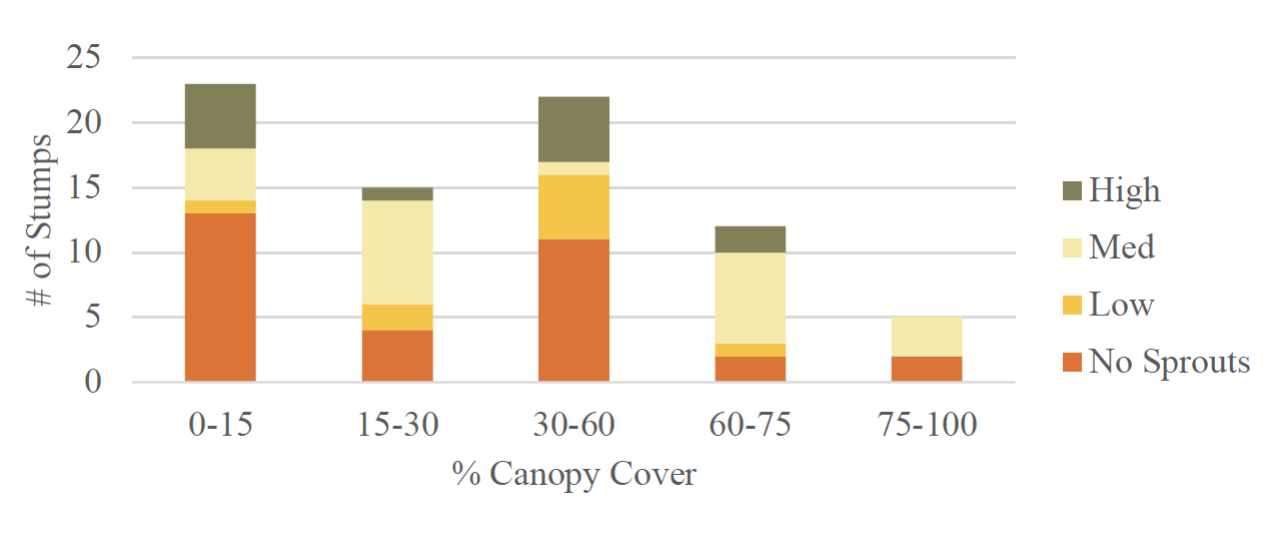
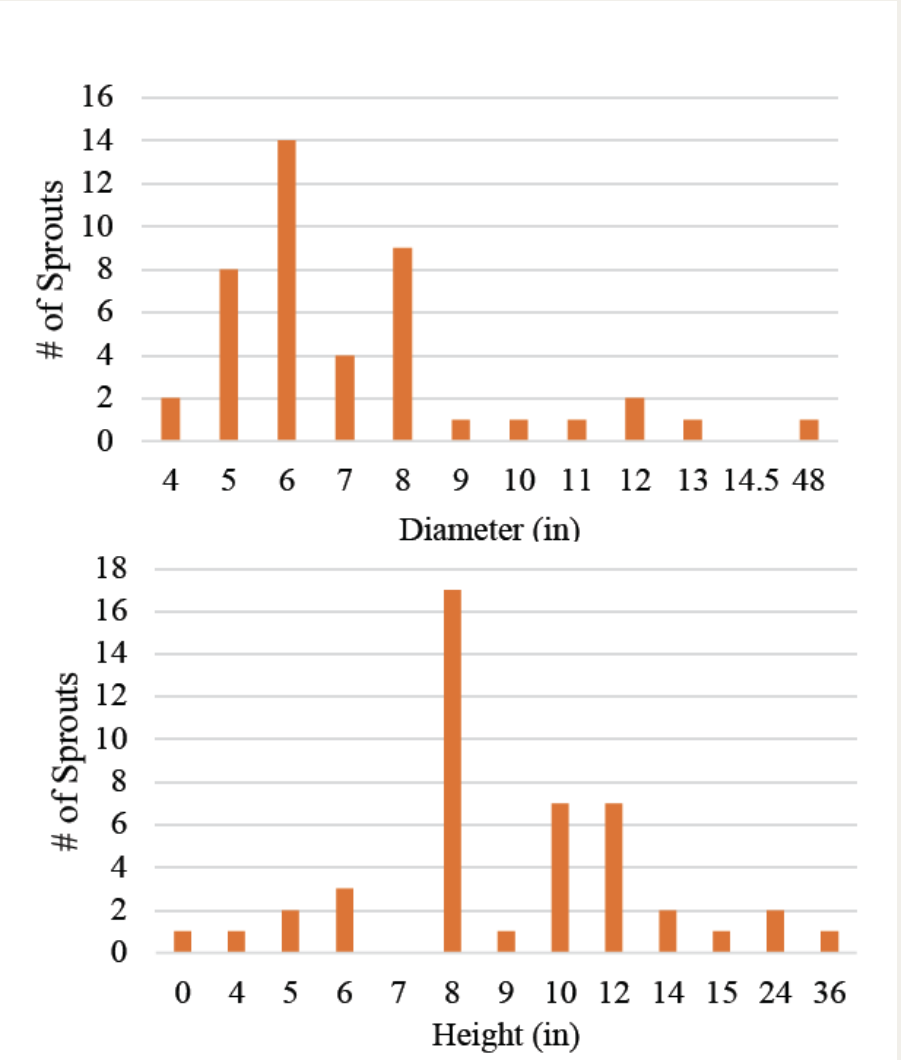


Figure 3: Comparison of average number of stems per plot between study years and treatment types.



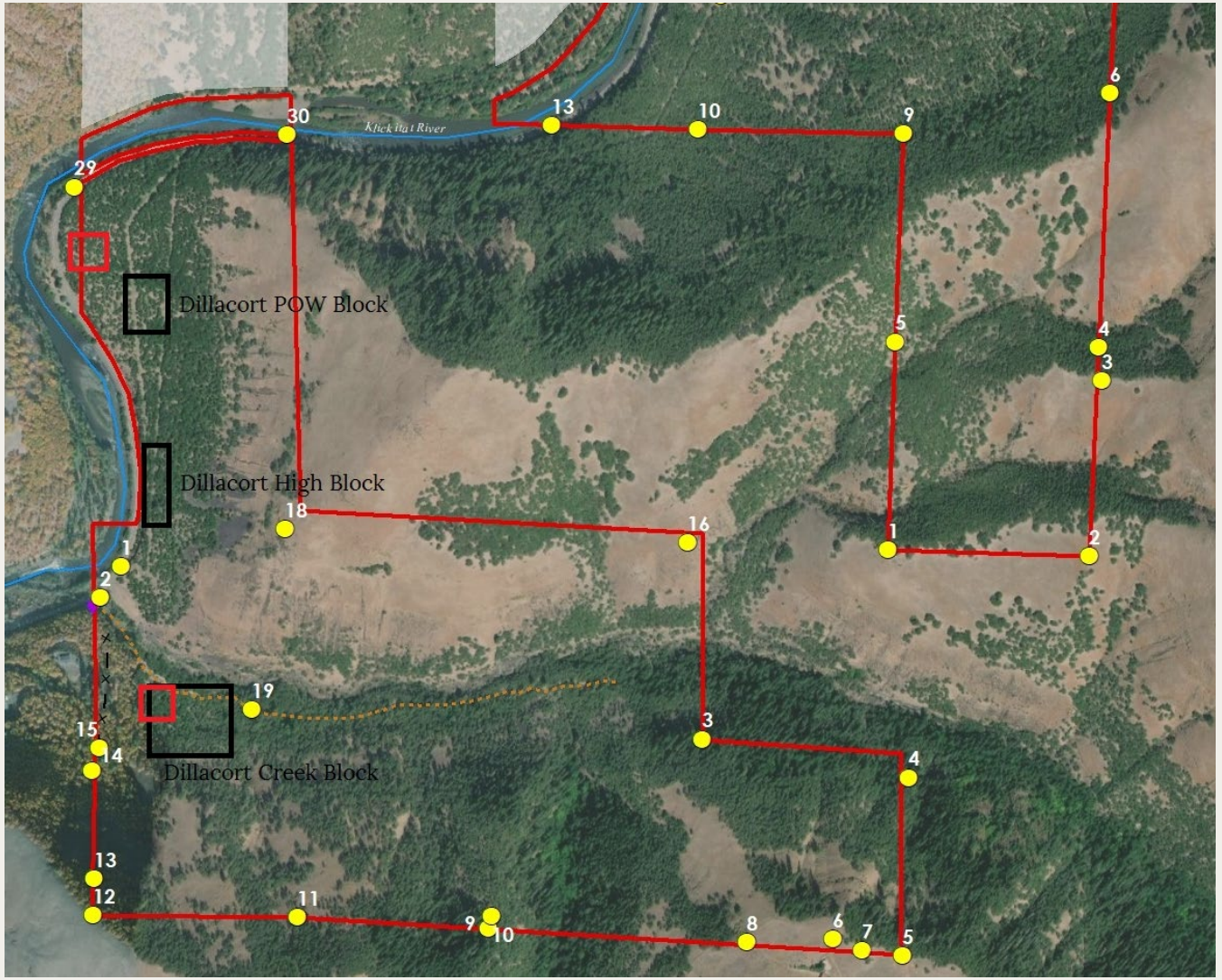
Effectiveness Monitoring: Stump sprout





Oregon White Oaks of the East Cascades: Evaluating Restoration Thinning Treatments

Nick Lewis
Masters of Environmental Management
Portland State University
June 2021



PERCENT CHANGE IN NUMBER OF SPROUTS FOLLOWING TREATMENT

Treatment	Description	Expected Outcomes	Dillacort Creek Block	Dillacort High Block	Dillacort POW Block
Control	No treatment	Increase in all growth metrics.	24.05	-9.63	3.47
Pruning	Removal of all but 1-2 dominant stems. Cut with pruning shears as close to the root crown as possible.	Increase in lead sprout height and diameter.	10.57	32.4	-29.96
Cut and Squirt	All sprouts are cut. Herbicide is immediately applied on cut surface of each sprout with a squirt bottle prior to cell collapse (herbicide: Element 3a (Triclopyr), surfactant: vegetable crop oil; blue dye; high percentage used at 50% concentration); time consuming and laborious, grazing permitted in area.	Reduce sprout abundance. Minimize non-target herbicide exposure. Use less herbicide in a more targeted fashion.	-73.36	-68.14	-82.05
Foliar Spray	Herbicide is applied directly to the leaves of all stump sprouts using a backpack wand spray applicator. (herbicide: Element 3a (Triclopyr), surfactant: vegetable crop oil); blue dye; low percentage used at 3% concentration); less time consuming and laborious than cut and squirt; grazing permitted	Reduce sprout abundance. Gain efficiency in application time. Risk of non-target mortality	-89.69	-96.21	-95.96

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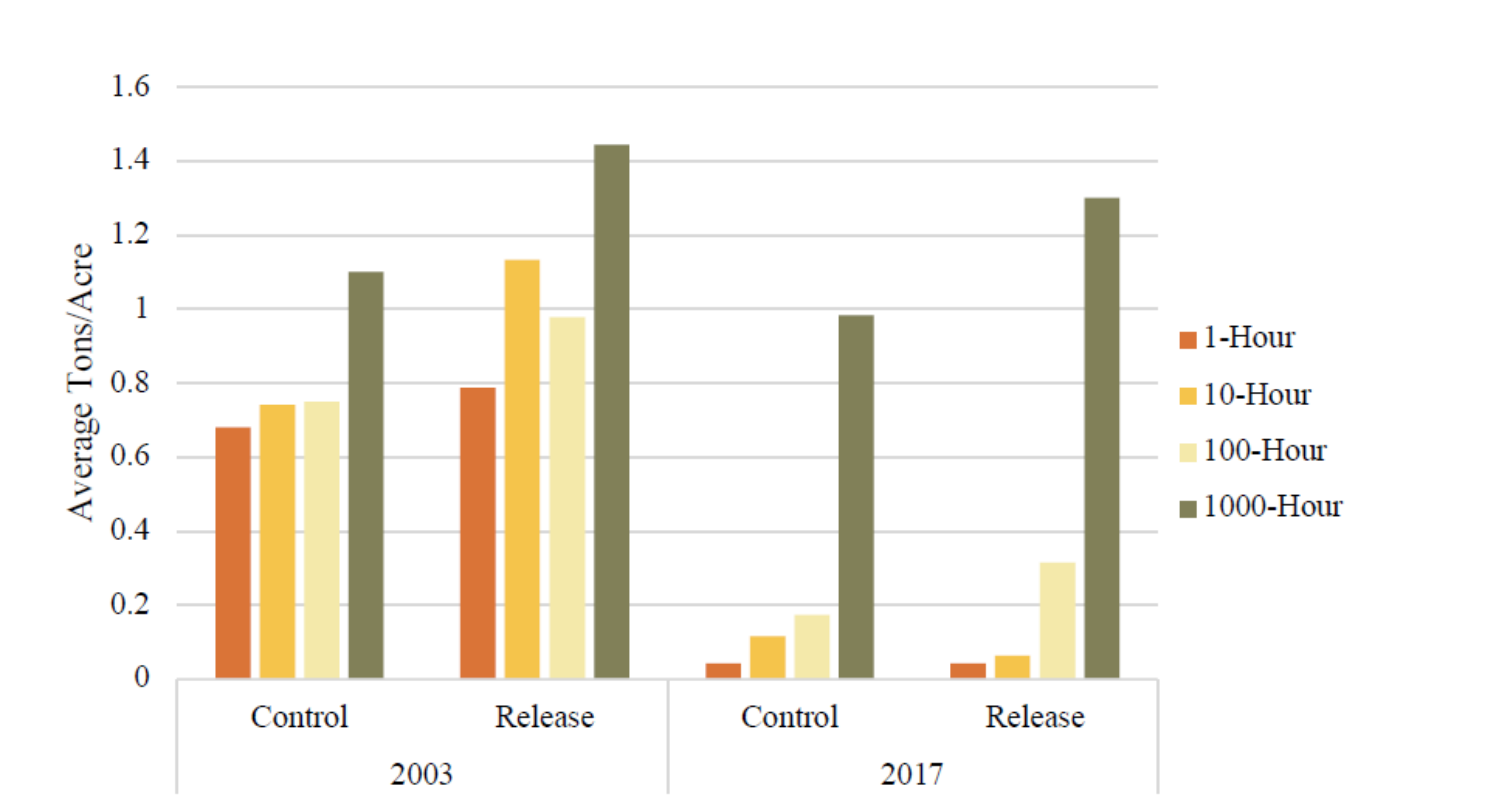
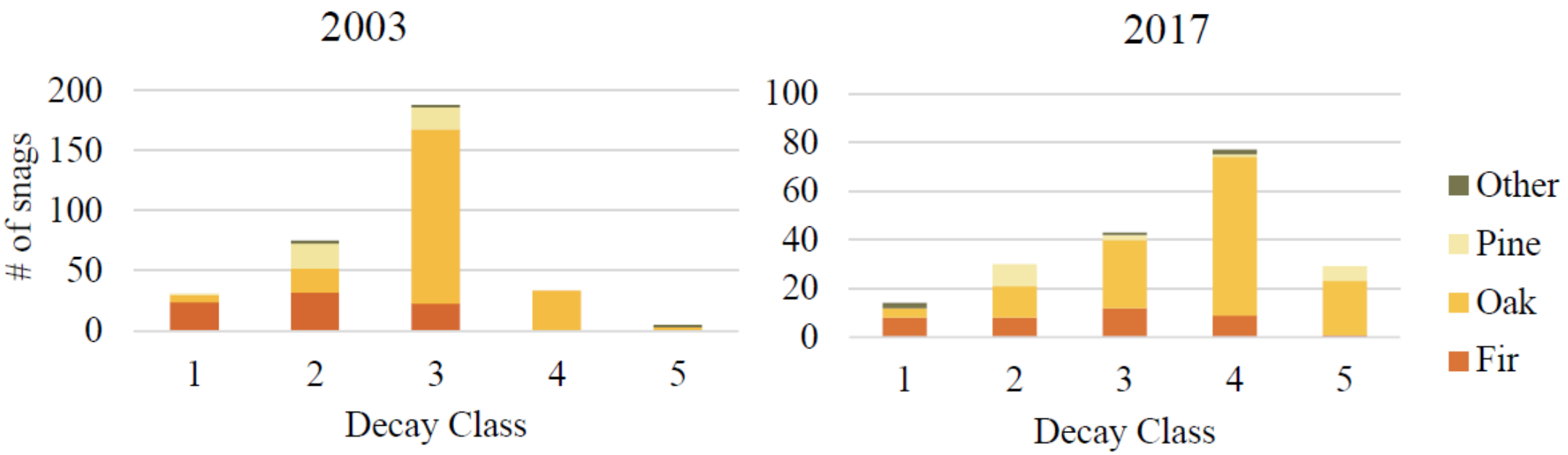
Effectiveness Monitoring: Fuels



Effectiveness Monitoring: Snag Abundance by Class



Looking Forward

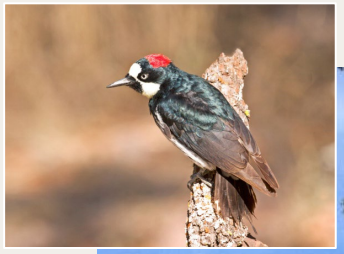
Vigorously protect intact understory

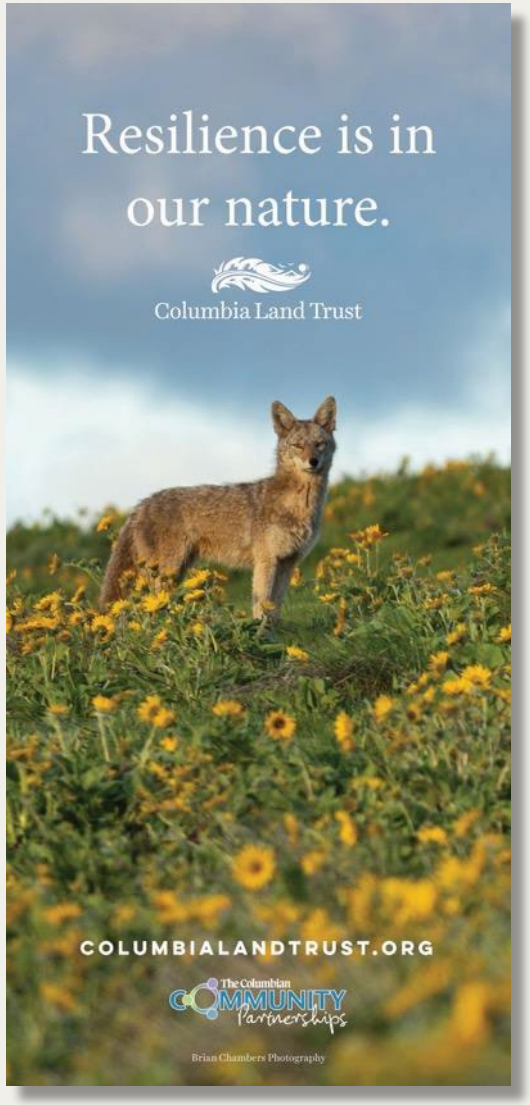
Take advantage of disturbed soils to seed in native grasses and forbs – burn piles and skid roads or landings, especially if operating where annual invasive grasses are present or adjacent.

Plan for maintenance re: stump sprouts

Consider impacts to first foods and cultural resources in our treatment design – herbicides are not edible.

And continue monitoring for better understanding of treatment effect on vigor, fire behavior, and recruitment over the long term.





Thank you!

Lindsay Cornelius
Columbia Land Trust
East Cascades Oak Partnership Manager
(360) 921-1073
lindsayc@columbialandtrust.org

Questions?

BLOCK NAME:			Date:				Recorded by:						
			Stump or Tree characteristics										
Sample #	Locating Notes	Treatment Type	# live stems in sample (within 3' radius)	If live sprouts, # of original cut stumps within 3' radius	Average sprout diameter	Shape of sprouts or tree	Clump/tree dimensions: ht (in feet to tenths of feet)	Clump/tree dimensions: width (in feet to tenths of feet)	Leader Dimensions: Ht 1	Leader Dimensions: Dia 1	# of dominant stems	Photo	
	Location of monument relative to sample stump/tree	Choose from menu below:	Assign value for # stems associated with stumps within 3' of one another, edge to edge and including live trees.	Assign value for # of stumps that sprouted	Estimate average sprout diameter (all diameters are estimated at ground level)	Choose from the menu below and note if tree or very dominant leader is present:	Assign estimated value:	Assign estimated value:	in feet to tenths of feet w/ stadia rod	estimate visually in inches	count total number of dominant stems	Assign #	Write any o future moni
Write tag #	Monuments were placed on north side of sample in Dillacort Creek Unit unless otherwise noted.	T1A: Prune	Count absolute number of live stems.	Count and enter absolute #		Emergent (fresh sprouts, no shape)	Measure in feet from the surface of the largest stump to the highest point of the clump with stadia rod. Stand across slope at 15 feet from largest stump to measure height and take photo. Round to nearest tenth.	Visually estimate diameter of clump or crown at its widest point in feet using stadia rod. Round to nearest tenth.	Measure from surface of largest stump in clump. Might be a sprout from that same stump, might not be. Stadia rod should be placed on the tallest stump regardless where dominant sprout is. Do not stretch or measure absolute length of sprout, but rather resting height.		Which stems appear to be dominating the clump? How many are there? If they all seem equal or none are emerging, choose 0.	Take from 15' on the side slope unless view is obscure d	Note if deac
		T1B: Foliar spray	Note # that are trees	Enter diameters for cut stumps.		Mushroom shaped, no leaders							
		T2B: Sprout hack and squirt	Record diameter for trees.			Mushroom shaped with leaders							
		T1C: Cut tree and spray				Columnar shaped							
		T1D: Exclosure fencing				Inverted vase-shaped							
		Control				Donut (like mushroom without a center)							

Mushroom shaped, with leaders, approx 5' tall, six feet wide

Inverted vase shaped

Emergent

Ribbon should be placed on the tallest or most dominant sprout - the one that will be kept if using a pruning treatment.