Small Tree Competing Vegetation Study (STCV)

Colin Kirkmire, Graduate Research Assistant
Advised by Dave Affleck and John Goodburn
Project Background

• The study ended last summer (’15) with final small trees measurements

• 26 study sites were maintained across multiple ownerships

• Overstory measurements continuing this summer
What exactly is a “small tree”? 

• >.5ft height for shade tolerant  
• >1ft for Intolerant  
• Less than 3.5” in DBH  
• 6,000 in initial measurements  
• 1,000 have since left this categorization  

Why are they important?
Map of Installations
Installation Layout

“Garden of Eden”, multiple herbicide applications

One time herbicide application

Control, no herbicide applied

Homogenous site quality, Vegetation and Overstory Condition
Plot Design

- Large tree overstory plot (DBH ≥ 10.5”) Area = 0.46 acre
- Medium tree overstory plot (DBH > 3.5”) Area = 0.26 acre
- Small tree plot (x6) Area = 0.007 acre
- 1m² or 4m² quad (x6)
- Vegetation transect (x6) Length = 31 ft

Not drawn to scale
Timeline of Measurements
Matrix of Site Index vs Residual BA
Tagged Trees by Installation

Eastern Cascades | Eastern WA/Idaho | Western Montana

Species
- ABGR
- ABLA
- BEPA
- LAOC
- PICO
- PIEN
- PIMO
- PIPO
- POTR
- PSME
- THPL

Number
All small tree heights across years
Small trees that aren’t small anymore
Differences in Species Response to Overstory

McHugh, R.P. 2009
How effective were herbicide treatments?
How effective were herbicide treatments?
Past INGY Small Tree Analysis:

- Physiological response of small PSME in varying understory vegetation and contrasting sites

- Applying 4 year predictions of height growth to FPS

- What are the best predictors of PAI for PSME and PIPO?

- Salas and Stage 2007 model for growth of Douglas-fir under different overstory and understory conditions in the Inland Northwest
Preliminary Research Questions

• Which of the predictor variables are best at predicting PSME and PIPO juvenile tree growth over complete growth period.

• How do such models compare to FVS Inland Empire predictions?

• Which vegetation sampling method (line transect vs 4x4 m plot) is best for giving us an expression that impacts the tree growth?
Citations and Acknowledgments


Thank you to John Goodburn and Dave Affleck for guidance in the project and INGY cooperators for supporting what has become a remarkably detailed and extensive dataset.