



Western Washington University
Western CEDAR

Salish Sea Ecosystem Conference

2018 Salish Sea Ecosystem Conference
(Seattle, Wash.)

Apr 4th, 2:00 PM - 2:15 PM

Monitoring and adaptation management of revegetation in the former Elwha Reservoirs

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Chenoweth, Joshua and McHenry, Mike, "Monitoring and adaptation management of revegetation in the former Elwha Reservoirs" (2018). *Salish Sea Ecosystem Conference*. 31.

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Elwha River Revegetation Project

Monitoring and adaptive management of revegetation in the former Elwha Reservoirs

Joshua Chenoweth

April 4, 2018

**Lake Aldwell
2009**

Elwha Dam



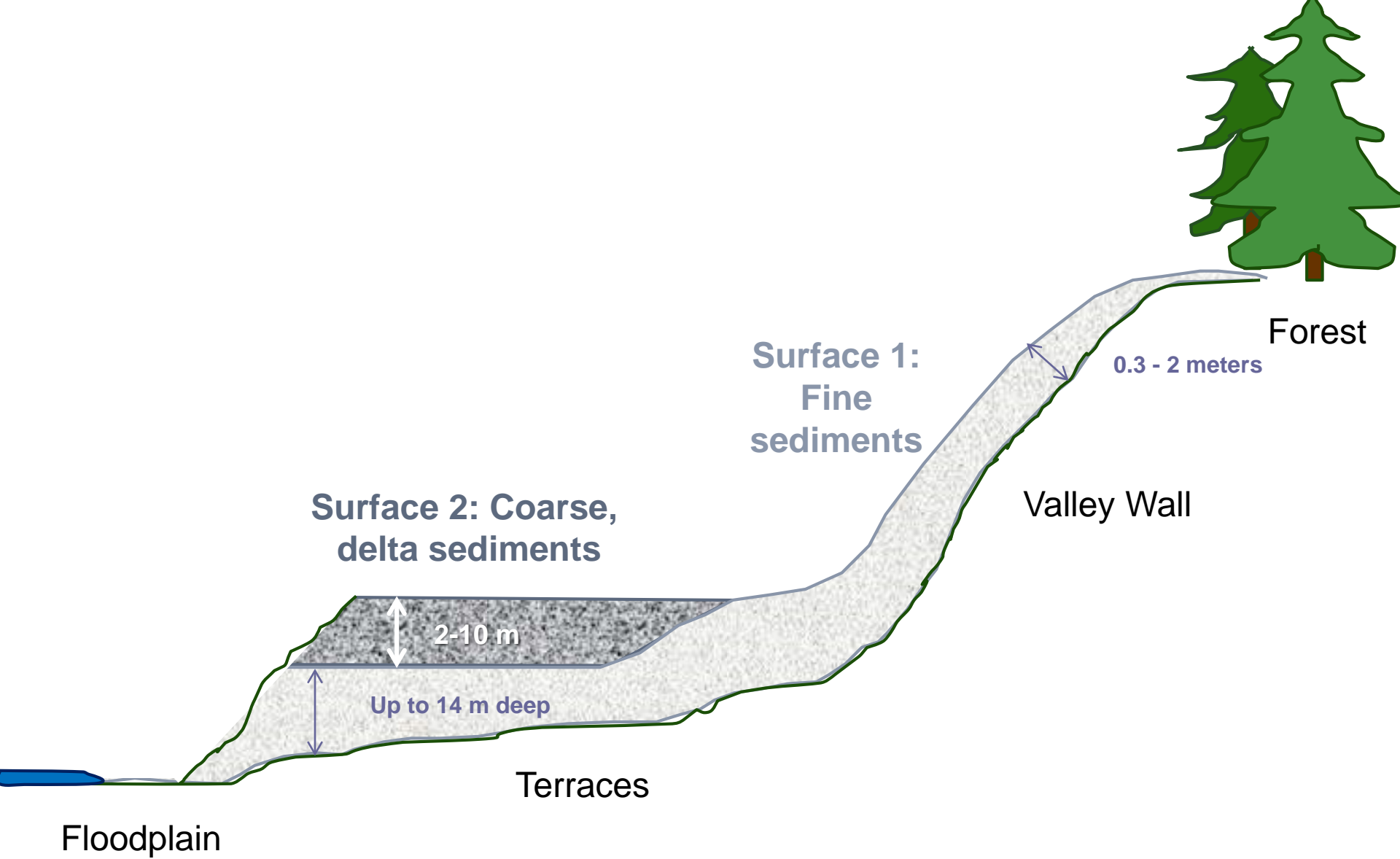
120.1 hectares

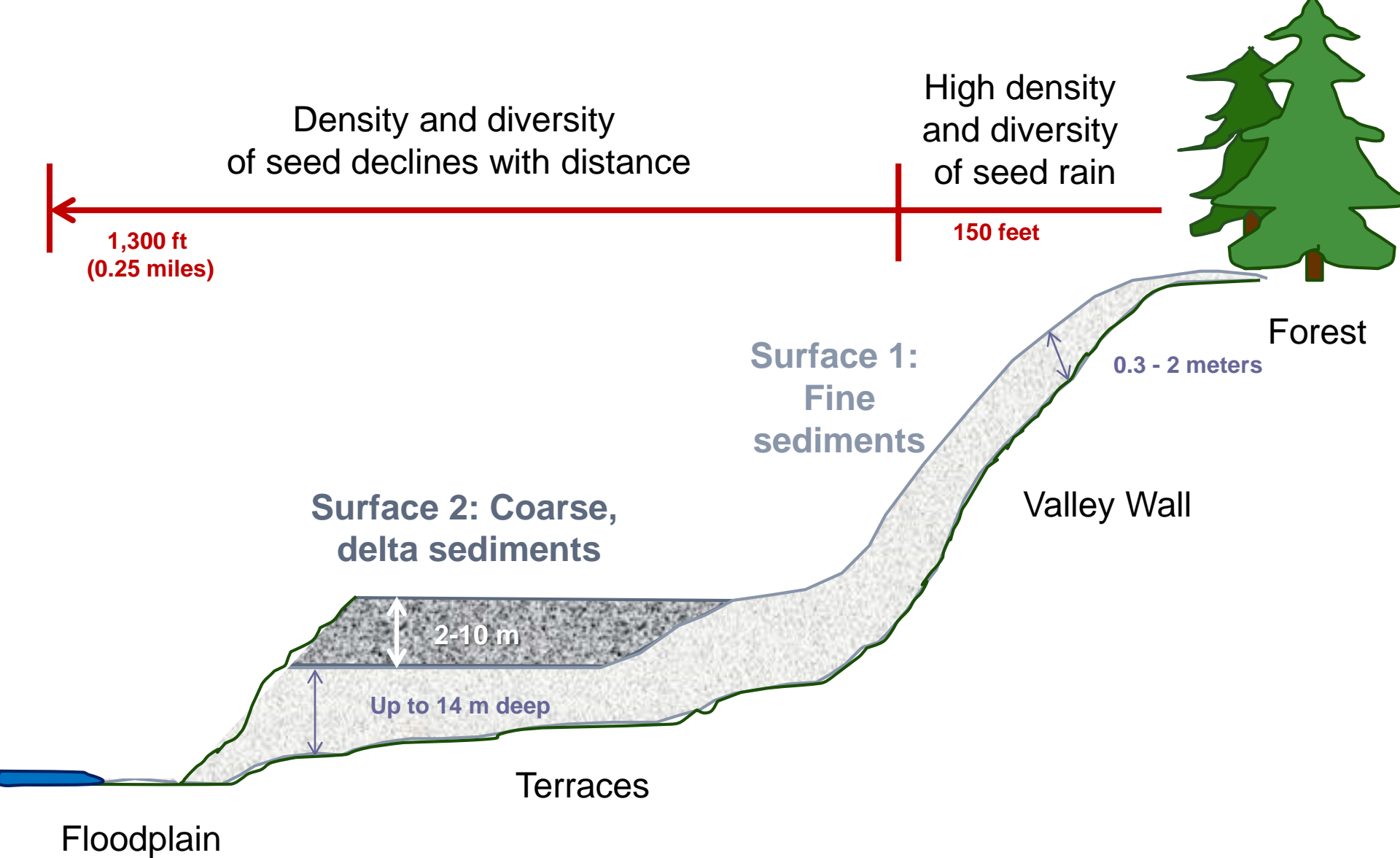
Glines Canyon
Dam



**Lake Mills
2009**

171.8 hectares







Revegetation Project Overview

- ⦿ Project goals:
 - Minimize invasive species populations
 - Restore ecosystem processes
 - Accelerate *forest* development

Revegetation Project Overview

- Adaptively manage the project.
 - Planting phased over 7 years
 - Allow natural regeneration wherever possible!
 - Plant lightly during dam removal
 - Permanent plots to monitor revegetation



Mean bare ground: 75%



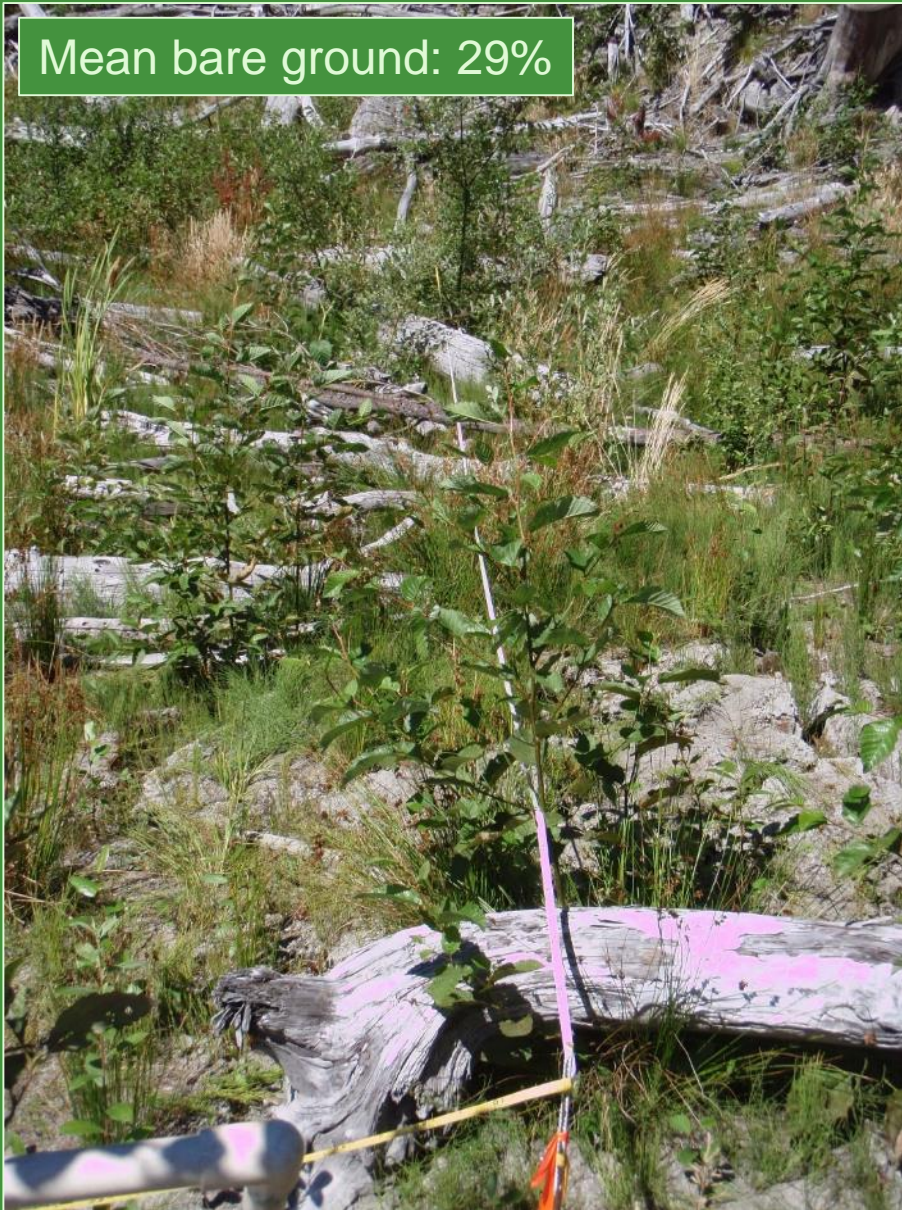
Mean bare ground: 83%



Fine Sediment Plot (unplanted): 2012

Coarse Sediment Plot (planted): 2012

Mean bare ground: 29%



Mean bare ground: 90%



Fine Sediment Plot (unplanted): 2013

Coarse Sediment Plot (planted): 2013

Mean bare ground: 6%

3.67 stems per meter square
36,700 per hectare
(14,854 per acre)

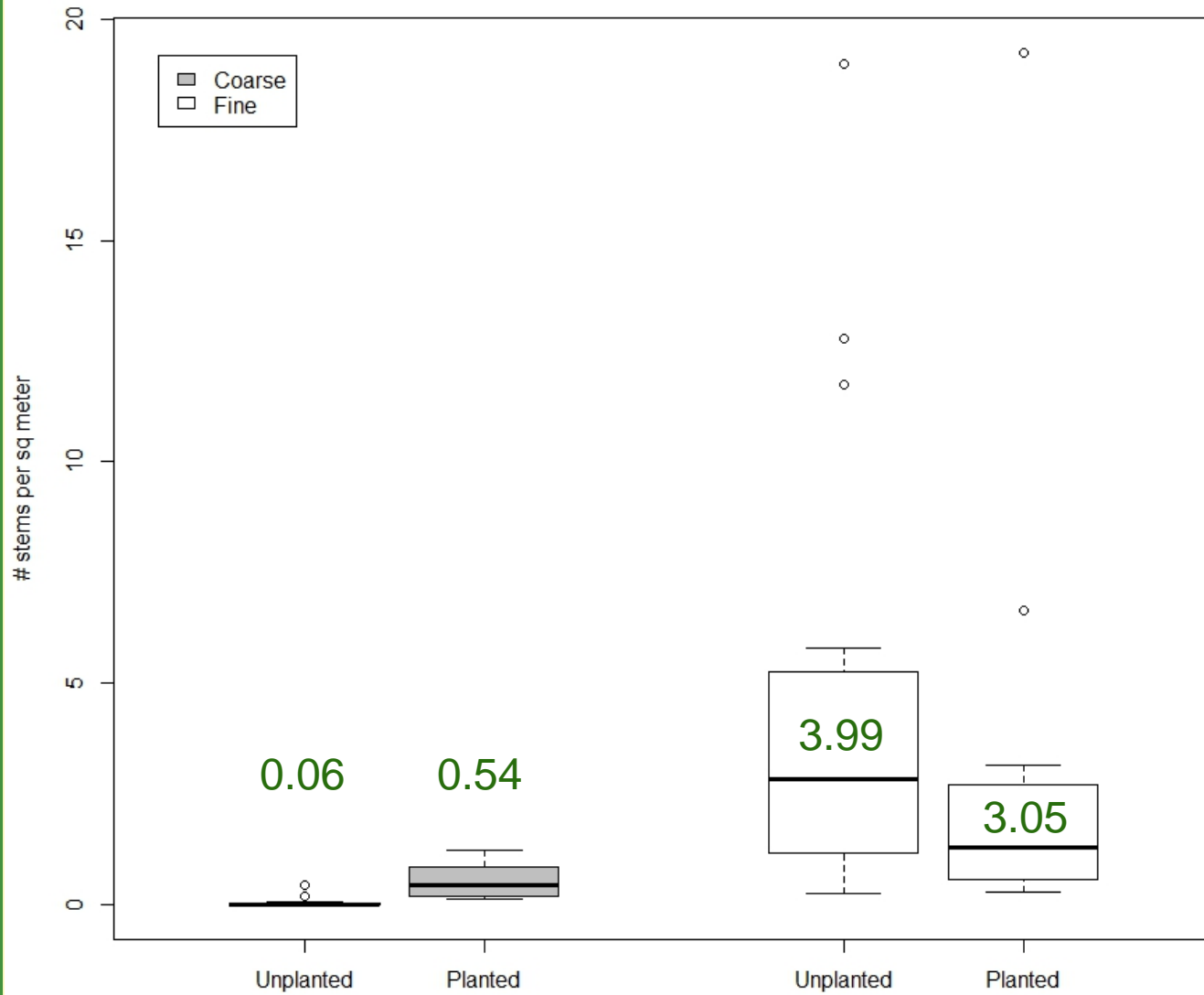
Mean bare ground: 83%

0.32 stems per meter square
3,200 per hectare
(1,294 per acre)

Fine Sediment Plot (unplanted): 2014

Coarse Sediment Plot (planted): 2014

Mean Stem Densities, 2014



2014



Fine Sediment Plots

Mean bare ground: 6%



Unplanted Plot

2014

Coarse Sediment Plots

Unseeded mean bare ground:
88%



Planted Plot

Seeded mean bare ground:
80%



Seeded Plot

Fine Sediment Plots

Mean bare ground: 1.5%



Unplanted Plot

2015

Coarse Sediment Plots

Unseeded mean bare ground:
81%



Planted Plot

Seeded mean bare ground:
58%



Seeded Plot

Fine Sediment Plots

Mean bare ground: 0.6%



Unplanted Plot

2016

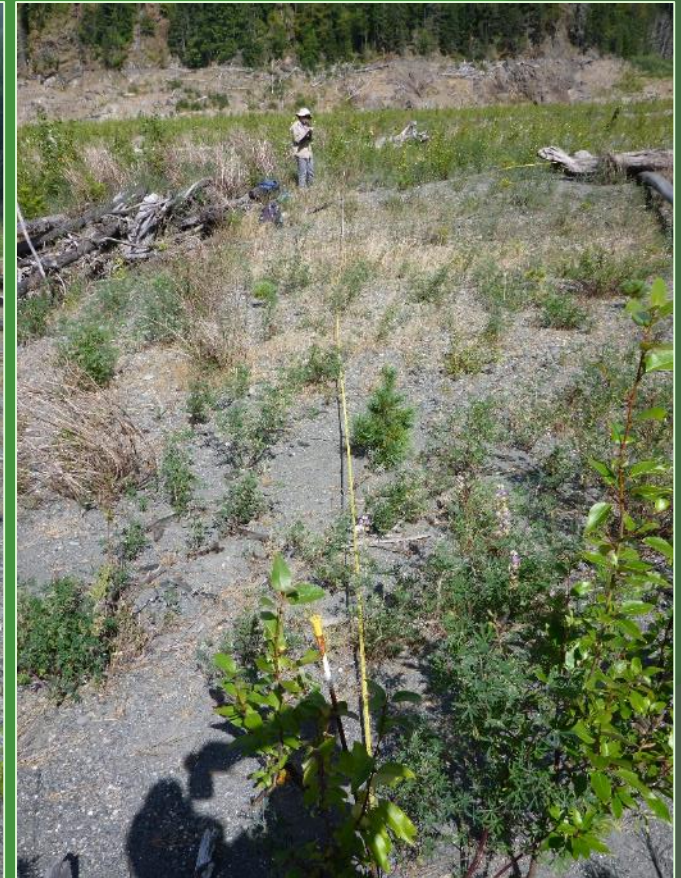
Coarse Sediment Plots

Unseeded mean bare ground:
69%



Planted Plot

Seeded mean bare ground:
40%



Seeded Plot

Fine Sediment Plots

Mean bare ground: 0.6%



Unplanted Plot

2017

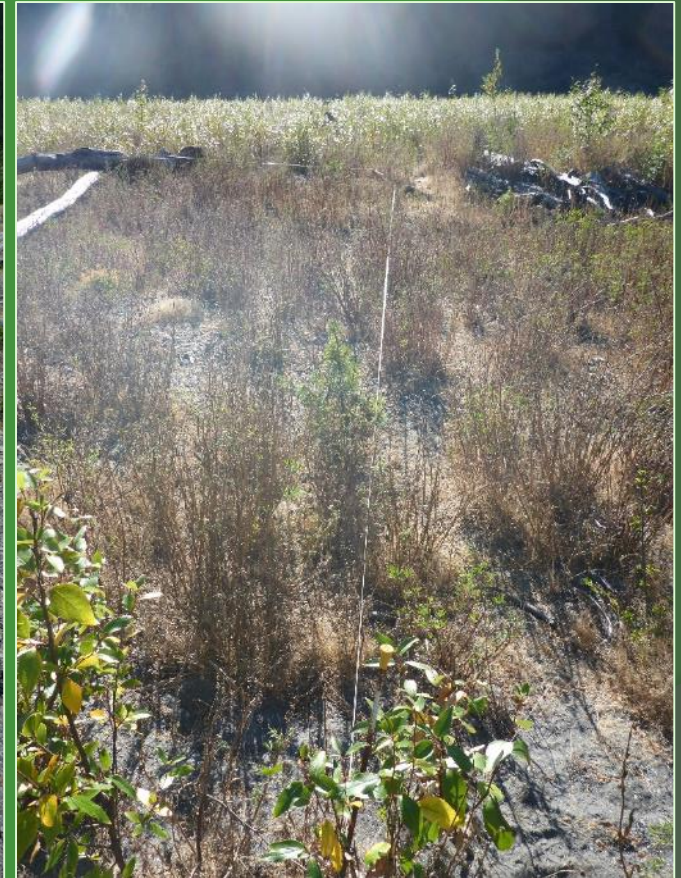
Coarse Sediment Plots

Unseeded mean bare ground:
69%



Planted Plot

Seeded mean bare ground:
40%



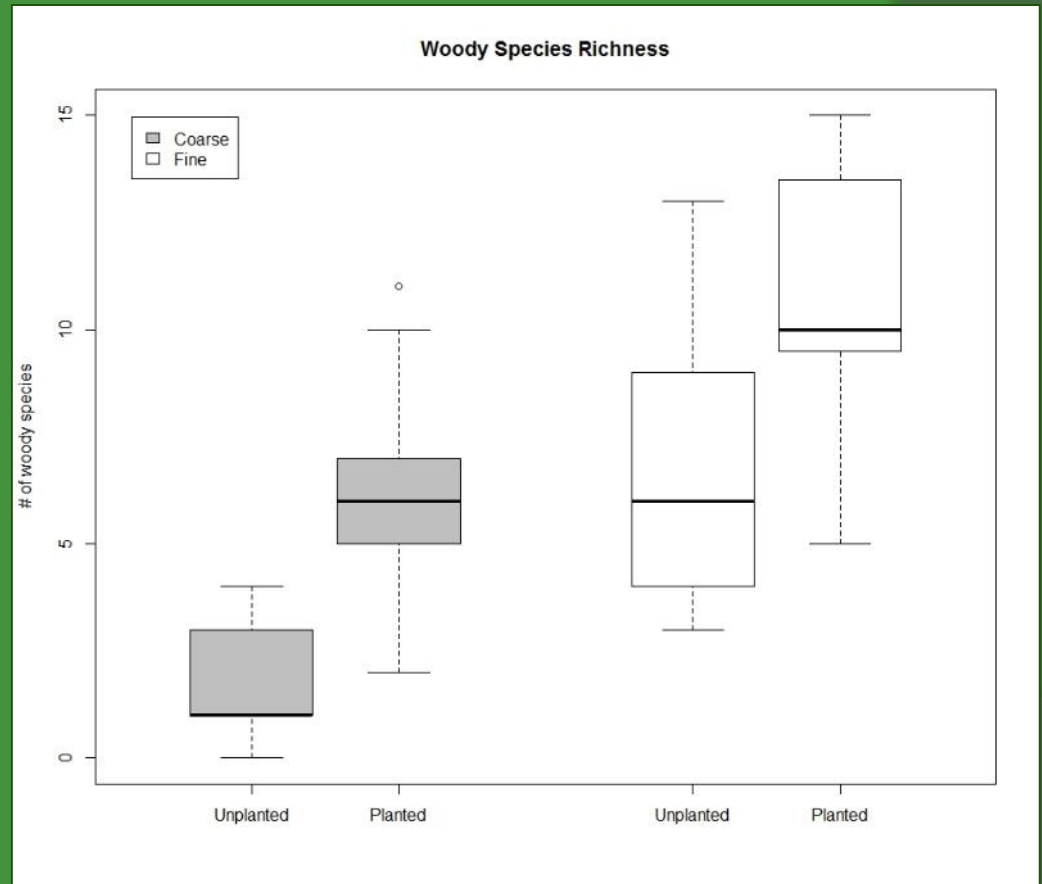
Seeded Plot

Former Lake Mills reservoir
June 2017



The primary message after 6 years...

- Sediment texture effects:
 - Rate of vegetation development
 - Species composition
 - Woody species richness and abundance



The impacts of planting and seeding...

- Seeding affected:
 - Bare ground reduction in the coarse sediments
 - Species composition
- Planting affected:
 - Woody species composition and richness in both textures
 - Stem densities in the coarse sediment



Questions?

