

# Getting Wood Back in the Stream: HDLWD and PALS

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CHEAP AND CHEERFUL STREAM RESTORATION WORKSHOP

9/18/2017

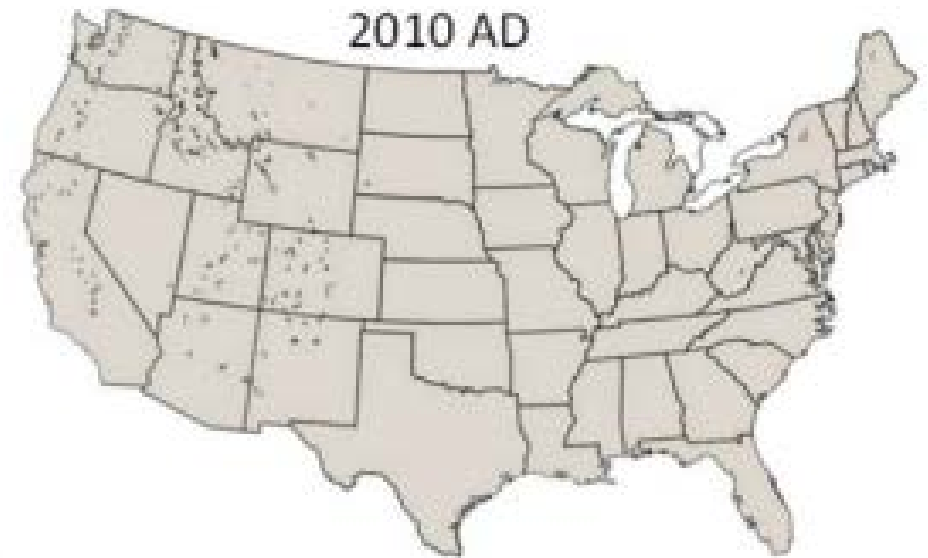
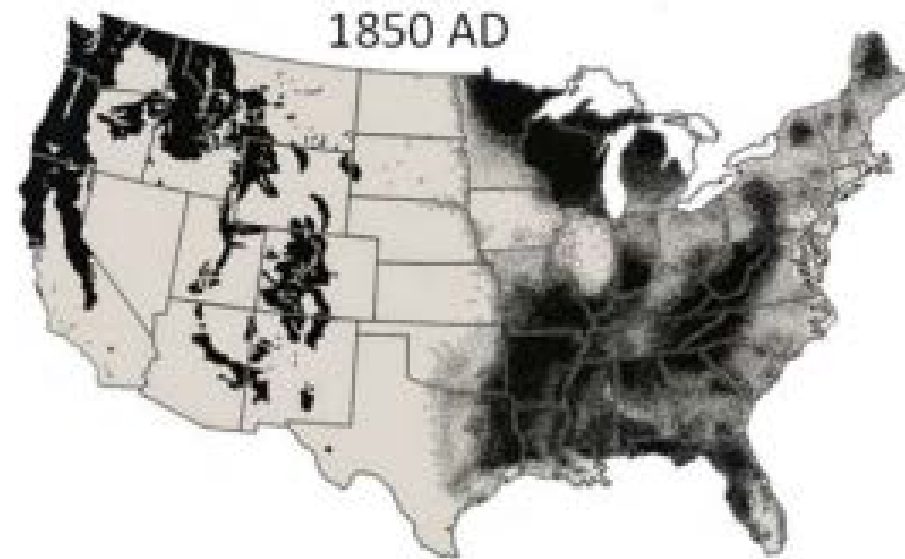
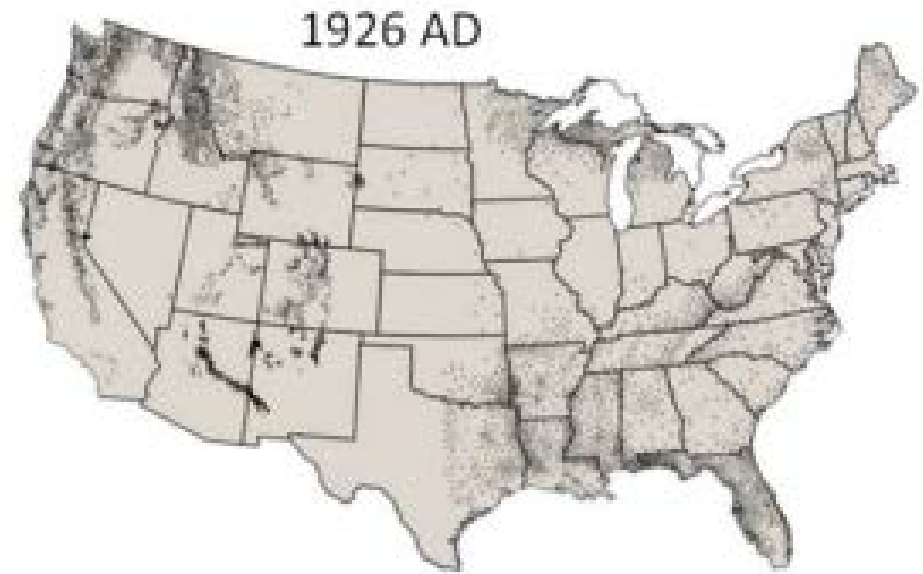
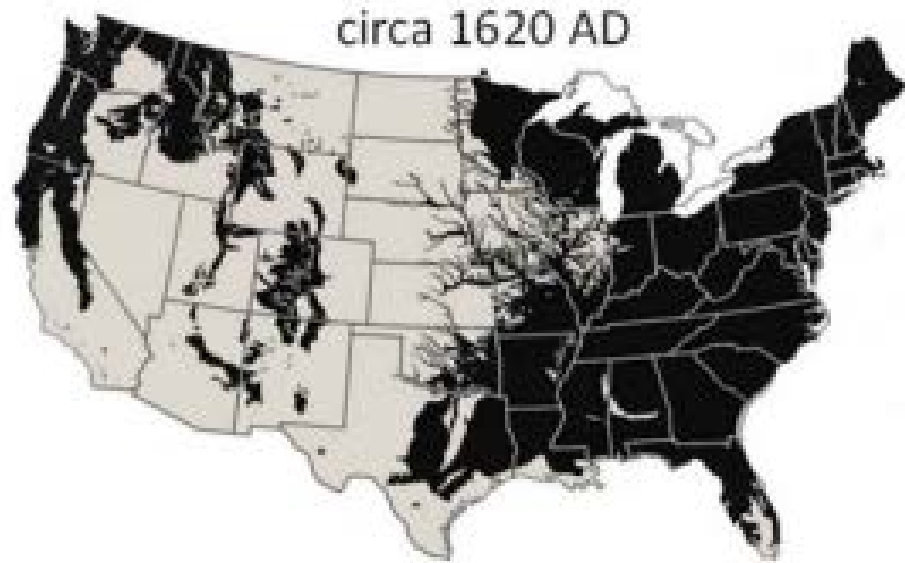
# Outline

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- Why large woody debris?
- Post Assisted Log Structures Methods and Design
- Asotin IMW

# Wood in Streams – Forest Landscapes

- = 25k Acres



# Wood in Streams – Penobscot River, Maine

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# Wood in Streams – Marble Creek, Idaho





# Wood in Streams – Grande Ronde, Oregon

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# Wood in Streams – Blue Mountains, Washington



Sawmill near Tucannon Ranger Station - 1906



Sawmill near Peola - 1886



# Wood in Streams – Lack of Complexity





# Wood in Streams – What do we do?





# Wood in Streams – Alternative Methods



**HALWD**

Post Assisted  
Log Structures  
(PALS)



# Design – Structure Types

PALS – Debris Jam



PALS – Bank Attached



PALS – Mid Channel

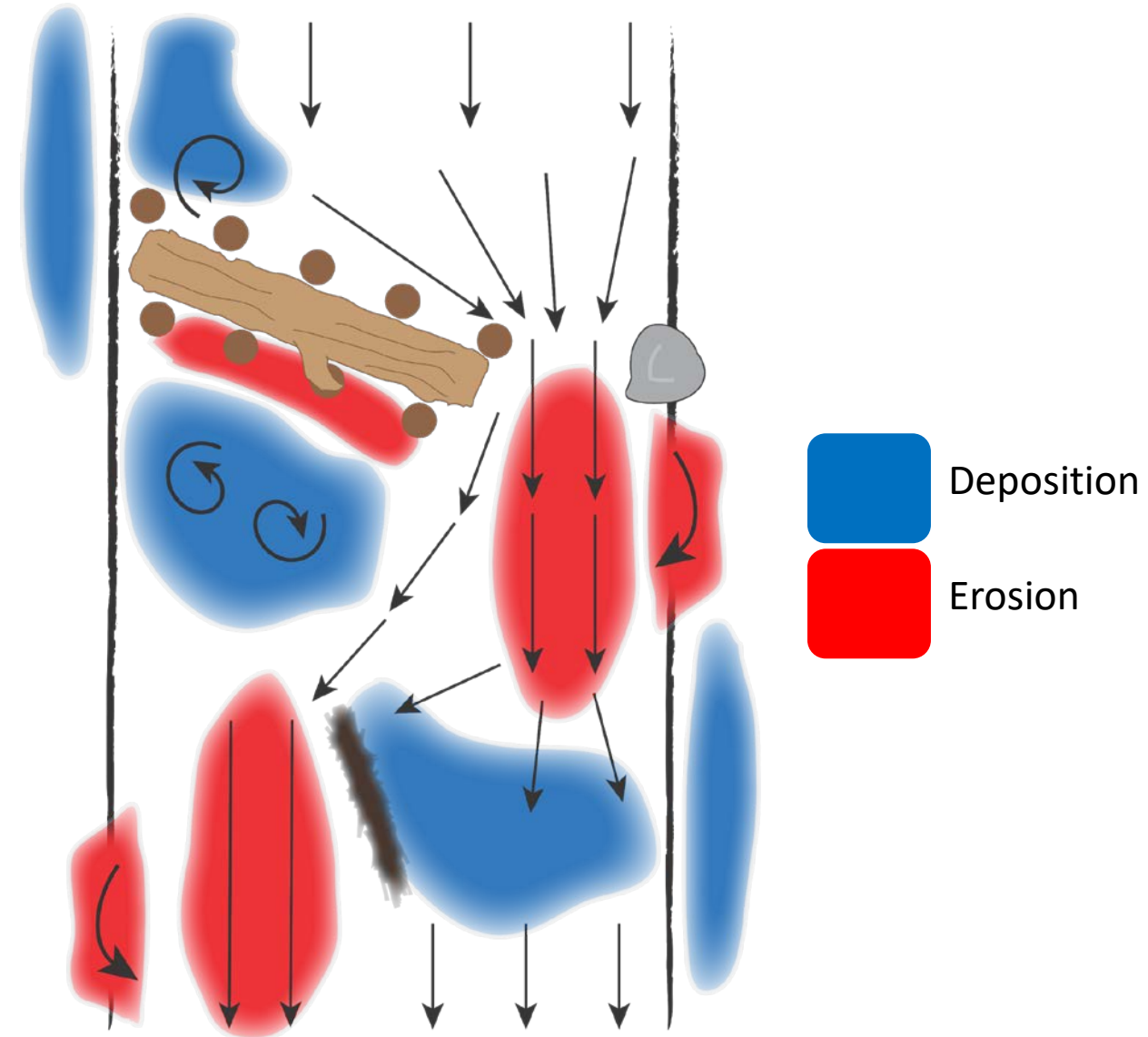


Seeding





# Design – Expectations





# Design – Structure Placement

Design		Implement	
Section Name	SF-S1	Structure Number	588
Design Date	7/13/2016	Design Crew	SB
		<a href="#">List</a>	
General		Photos	
Type	PALS_Bank	DWS Number	107
Bank	RL	Post Orientation	120
Est Post Count	7 to 9	% Channel Constriction	80-90
LWD Intro Type	2 Guy LWD		
<b>Anchor Feature</b>		<b>Existing Feature</b>	
<input type="checkbox"/> Boulder <input type="checkbox"/> NA		<input checked="" type="checkbox"/> Forced Pool <input type="checkbox"/> Bank Erosion	
<input type="checkbox"/> LWD		<input checked="" type="checkbox"/> Eddy Bar <input type="checkbox"/> Tree Recruitment	
<input type="checkbox"/> Live Tree < 10 cm dia.		<input type="checkbox"/> Riffle <input type="checkbox"/> Plunge Pool	
<input type="checkbox"/> Live Tree > 10 cm dia.		<input checked="" type="checkbox"/> Undercut <input type="checkbox"/> Side Channel	
<input type="checkbox"/> Roots		<input type="checkbox"/> Mid Channel Bar <input type="checkbox"/> Flood Surface	
<input type="checkbox"/> Rock/Wood Structure			
<b>Exploit Existence Of</b>		<b>Intended Response</b>	
<input checked="" type="checkbox"/> Boulder <input type="checkbox"/> NA		<input checked="" type="checkbox"/> Forced Pool <input type="checkbox"/> Mid Channel Bar	
<input type="checkbox"/> LWD		<input type="checkbox"/> Plunge Pool <input type="checkbox"/> Bank Erosion	
<input type="checkbox"/> Roots		<input type="checkbox"/> Dam Pool <input type="checkbox"/> Cover	
<input type="checkbox"/> Rock Structure		<input type="checkbox"/> Eddy Bar <input checked="" type="checkbox"/> Tree Recruitment	
<input type="checkbox"/> Wood Structure		<input type="checkbox"/> Forced Bar <input type="checkbox"/> Side Channel	
		<input type="checkbox"/> Riffle <input checked="" type="checkbox"/> Flood Surface	
		<input checked="" type="checkbox"/> Undercut <input type="checkbox"/> Other...	
Aim at rock to accentuate pool and provide cover		<a href="#">Get Lat Long</a>	
		46.254246 -117.291453 10	





# Design – Implementation and Tracking

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# Implementation – Getting Started

- Equipment
  - Post Pounder
  - Posts
  - Safety
  - Lashing/Pinning





# Implementation – Getting Started

- Wood!
  - Public Lands
  - Private
  - Yard Waste
  - Scavenge
  - Staging





# Implementation – Construction

- Lessons learned from Asotin IMW



Poor PALS



Good PALS



# Implementation – Construction

- Lessons learned from Asotin IMW



Poor Wood Amount



Good Wood Amount



# Implementation – Construction

- Lessons learned from Asotin IMW



Poor Density



Good Density



# Implementation – Construction

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- Lessons learned from Asotin IMW



Poor Constriction



Good Constriction



# Implementation – Construction

- Lessons learned from Asotin IMW
  - Be explicit
  - Know your stream
  - Go big
  - Sediment sources
  - Adapt





# In the Field

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- Tomorrow – Little Tucannon





# Up Next – Break!

