

Technical Workshop on Large Wood Applications and Research Needs in River Restoration

Sponsors: U.S. Bureau of Reclamation & U.S. Army Corps of Engineers

Location: Center for Wooden Boats, 1010 Valley St, Seattle, WA 98109

(<http://cwb.org/cwb-seattle>)

Workshop Website: <http://www.usbr.gov/research/science-and-tech/highlights/large-wood.html>

Workshop Facilitator: Catherine Petroff

Tuesday, February 14, 2012: Kick-off and Field Trip

8:30 to 9:00 AM Workshop Kick-Off

- Overview of workshop purpose, scope, and product goal
- Brief roundtable introductions of participants
- Workshop participant list and logistics handouts
- Describe process for break-out group sign-up information for workshop discussion sessions

9:00 to 9:45 AM Risk presentation

- David Eckberg: "Build it and they will come: addressing the liabilities of large wood in rivers"

9:45 to 10:15 AM Cedar and Green River Field Trip

- Zac Corum (USACE) and Diane Concannon (King County): Overview and Logistics

10:15 to 10:30 AM Break

10:30 AM Depart for Field Trip from Center for Wooden Boats

Logistics:

- 10 to 15 passenger vans will be provided for participant transportation (parking is limited along field trip stops and at Center for Wooden Boats)
- Lunch (for those who signed up on registration form) and water will be provided
- Bring outdoor comfortable and warm clothing layers, hiking footwear, and rain gear and walking around uneven ground near river banks, gravel bars, etc
- Plan for anything from sunshine to snow! Temperatures are typically in the 50s this time of year but can drop into 30s and 40s during storms
- Conditions may require rubber boots or hip waders for comfort. A limited supply of rubber knee boots is available from USACE;
 - Please alert Zac Corum (206.764.6581) if you will need a pair of boots or if you have any questions.
- A scheduled coffee/facilities break is planned.

5:00 PM Return to Center for Wooden Boats and Adjourn for Day

Wednesday, February 15, 2012: Workshop Sessions

Location: Center for Wooden Boats, 1010 Valley St, Seattle, WA 98109

8:00 to 8:15: Day 2 Overview

- Recap Day 1 Field Trip
- Agenda for Day 2
- Brief review of workshop goals
- Introductions of any new participants

Session 1: System and Reach Scale Issues and Contexts in Planning Wood-based Restoration

Moderator: Jock Conyngham

Session 1 Overview

Wood regimes have varying characteristics and play differing roles in abiotic and biotic processes in various hydro-physiographic regions, valley types, and even points in a single system's channel continuum. Site-scale work must account for these variations in articulating project objectives, in specific design formulation, and in monitoring plans and implementation. This session will address hydrologic, geomorphic, and biological contexts and responses to wood regimes and wood-based restoration in various regions and settings.

8:15 to 9:15 AM: Session 1 Presentations

1. Tim Abbe (Cardo ENTRIX) – *Abiotic responses to wood*
2. Dana Warren (Oregon State) – *Biogeochemistry and food web roles of wood in aquatic ecosystems*
3. George Pess (NOAA - Northwest Fisheries Science Center) – *Fish & habitat considerations for planning large wood applications at a reach and watershed scale*

9:15 to 9:30 Overview of Small Group Break-out Session Strategy and Products

- Review product goal: Develop guidelines for woody debris
- Handout questions for break-out groups and discuss strategy for discussions and presentation guidelines back to larger group

9:30 to 9:45 am: Break

9:45 to 10:45 am: Session 1 Small Break-outs

Group #1: Geomorphic, fluvial processes and habitat context

Discussion topics may include: normative regime assessment (how impacted is the system?), background/historic wood load calculation methods, cumulative effects.

Group #2: Integrating projects with current supply and transport dynamics

Discussion topics may include: recruitment mechanisms, use of stochastic hydrology in pulsed loading estimates, designing crossings for debris passage, LWD management at reservoirs, and reach-scale layout/spacing of wood features.

Group #3: Effects and benefits

Discussion topics may include: cost-benefit and risk-reward profiles of various restoration techniques, multi-criteria benefit assessment techniques, and limiting factor analyses.

Group #4: The social context

Discussion topics may include: public perceptions of risk and value, avoiding infrastructure damage from debris deposition and altered flood recurrence, utilization of wood debris after major floods.

10:45 to 12:00 pm: Session 1 Large Group Synthesis

- 10 to 15 minute presentation on summary recommendations from each facilitator of small break-out group
- Facilitated synthesis and additional input on recommendations from small group information
- Summarize findings

End Session 1

Lunch (on your own): 12:00 to 1:00 pm

Session 2: Designing at Local Scale

Moderator: Kendra Russell

Session 2 Overview

In this session, the group will discuss research needs relating to designing large woody debris structures at a local scale. This includes the design of physical structural components, the effect that the structure has on local hydraulics and sedimentation, and the stability of the structure. We will focus on how the structure architecture is determined, such as number of wood pieces and their orientation, and other parameters, such as extent and magnitude of the backwater, that need to be calculated before construction. In addition, how to predict changes near the structure (within several channel widths) and tools that are available or would be useful will be discussed.

1:00 to 2:15 pm: Session 2 Presentations

1. Doug Shields (National Sedimentation Laboratory) – *Design criteria for instream large wood*
2. Vivian Leung (University of Washington) – *Laboratory research relating to large woody design*
3. Melinda Daniels (Kansas State University) – *The local hydraulic and geomorphic effects of natural large wood structures*

2:15 to 2:30 pm: Break

2:30 to 3:30 pm: Session 2 Small Break-out Discussions

Group #1 topic: Structural Characteristics of LWD

Discussion topics may include: Wood size, rootwad size, number pieces, orientation, vertical extent, debris recruitment, architecture, burial and angle of logs

Group #2 topic: Morphological changes produced by LWD

Discussion topics may include: Bank erosion, bed erosion, deposition, scour hole production, numerical and/or physical modeling to predict changes

Group #3 topic: Hydraulic and habitat changes produced by LWD

Discussion topics may include: Backwater effects, debris recruitment, changes in sediment sizing, habitat value and benefit, methods to predict changes such as modeling

Group #4 topic: Stability of LWD

Discussion topics may include: Ballast material, depth to key in members, loose vs. tied-in, factor of safety, drag, and anchoring

3:30 to 5:00 pm: Session 2 Large Group Synthesis

- 10 to 15 minute presentation on summary recommendations from each facilitator of small break-out group
- Facilitated synthesis and additional input on recommendations from small group information
- Summarize findings

End Session 2

Thursday, February 16, 2012: Workshop Sessions

Location: Center for Wooden Boats, 1010 Valley St, Seattle, WA 98109

8:00 to 8:15: Overview

- Agenda for Day 3
- Introductions of any new participants

8:15 to 8:30 Recap of Workshop Progress and Remaining Gaps

- *Michael Stanley Gallisdorfer (University at Buffalo), Jane Atha (University of Oregon), Sarah Davidson (University of British Columbia), and Claire Ruffing (Kansas State University)*

Session 3: Implementation and Monitoring

Moderator: D.J. Bandrowski

Session overview

The focus of this session is on the implementation and monitoring aspects of large wood projects. This session will address the evolution of construction techniques for large wood installation and vital lessons learned along the way. The session will also link the physical and biological responses of large wood implementation and discuss the applied monitoring methods that drive adaptive management learning and progress.

8:30 to 9:30 am: Session 3 Presentations

1. Rocco Fiori (Fiori Geosciences - Klamath, CA) – *Implementation of large wood to affect hydrogeomorphic conditions that benefit salmonids and aquatic ecosystems: Examples from Northern California*
2. Roger Peters (USFWS - Seattle, WA) – *Biological monitoring of wood and ELJs in western Washington*
3. Zac Corum (Corp of Engineers - Seattle, WA) – *Lessons Learned in the First Decade of the Upper Green River Fish Habitat Rehabilitation Project in Washington State*

9:30 to 9:45 am: Break

9:45 to 10:45 am: Session 3 Small Break-out Discussions

Group #1 topic: Applied techniques of large wood implementation

Discussion topics may include: practical stabilization methods (e.g., piles vs. posts, ballasting methods, etc), constructability challenges, factor of safety, longevity in relation to installation, cost-benefit considerations, permeability relative to habitat and public safety.

Group #2 topic: Monitoring the biological response of large wood

Discussion topics may include: methods of measuring fish under log jams, monitoring the utilization of other species, quantifying secondary ecologic effects (side channels,

hyporheic, forest/riparian development), advancing predictive tools in relation to biological monitoring, radio frequency technology to track habitat usage, photo documentation methods,

Group #3 topic: Monitoring the physical response of large wood

Discussion topics may include: documenting bed texture and morphological change, advancing predictive tools in relation to physical monitoring, radio frequency technology to track scour production, field measuring hydraulics around the wood structures, photo documentation methods, bathymetric surveying techniques around wood jams, tracking the mobilization and transport of wood during floods, and the pros/cons of marking large wood for monitoring.

Group #4 topic: The adaptive management process for large wood projects

Discussion topics may include: addressing maintenance needs relative to stability and function, applying monitoring data back to the design cycle, reporting monitoring/analysis results to stakeholders and managers, refining risk assessment from monitoring, addressing liability issues over time, documenting the evolution of structure size and function, effective and practical inspection and reporting strategies, strategies of conveying the use of large wood to the public.

10:45 to 12:00 pm: Session 3 Large Group Synopsis

- 10 to 15 minute presentation on summary recommendations from each facilitator of small break-out group
- Facilitated synthesis and additional input on recommendations from small group information

12:00 to 1:00 pm: Lunch (on your own)

1:00 to 2:00 pm: Large Group Discussion: Workshop Product and Next Steps for Proposals

- Workshop product outline development
- Product schedule and distribution
- Research collaboration opportunities
 - Agency representatives share schedules, contacts, and interests for future research proposal development
 - Posting/sharing of research collaborations and ideas

2:00 to 2:45 pm: Large Group Discussion: Reference Material Needs

- Large wood design guidelines efforts and link to research efforts
- Large wood implementation guidelines efforts and link to research efforts

2:45 to 3:00 pm: Wrap-up and Feedback