

SESSION PROPOSAL ABSTRACT

SESSION TITLE: WHERE RIVERS MEET ROADS: SUSTAINABLE STREAM CROSSING AND RESTORATION DESIGN

Session Convener¹

¹ Name, Affiliation, Contact Information

TOPIC: Where rivers meet roads: using geomorphology, ecology, hydraulics, and engineering to develop sustainable stream crossings

SESSION DESCRIPTION:

Roads are the foundation of transportation networks and provide for the passage of people and goods, while rivers are the foundation of fluvial freshwater aquatic systems, and provide passage of water, sediment, organics, nutrients, and organisms. When these transportation networks intersect, two dynamic systems must be accommodated through a single engineering structure. Historically, river systems have been forced to accommodate the need for transit of people and goods. The ecologic cost of this accommodation can be measured in terms of reduced floodplain function, loss of aquatic organism and terrestrial species passage, and/or discontinuities in the water, sediment and wood transport system. At the intersection of roads and rivers is also the intersection of what can sometimes be disparate disciplines, ownerships, and responsibilities.

In this context, the intrinsically linked nature of rivers and crossings makes the self-segregation of bridge engineering and river restoration communities surprising. This segregation exacerbates the already challenging aspect of river management planning that must occur between local, state, and Federal agencies, often with differing missions, jurisdictions, and legal authorities.

The importance of stream crossings in river restoration is substantial. A brief review of stream restoration projects in Oregon and Washington indicates that a significant percentage of restoration projects incorporate one or more stream crossings. The Washington State Salmon Recovery Funding Board reports that 44% of their restoration projects since 1999 incorporate one or more stream crossings. The Oregon Watershed Enhancement Board reports that, since 1999, 12% of their funding has been directed specifically to fish passage stream crossing improvements, with many other projects incorporating aspects of stream crossings. The Bonneville Power Administration has funded 524 stream crossing projects since 2004, not including habitat restoration projects that have a stream crossing within the project area.

In summary, these challenges, the dynamic nature and ecologic value of river systems, the sheer number of restoration-related crossing projects, and the high cost of stream crossings,

highlight the importance of better understanding how river and floodplain functions at crossings can be maximized, while cost and risk are minimized.

REASON WHY THIS SESSION TOPIC IS RELEVANT FOR THE SYMPOSIUM:

Advancing best practice and developing standards for the design of stream crossings is an important goal of River Restoration Northwest and the community of dedicated restoration practitioners. Given that a significant percentage of restoration projects include stream crossings, it is in the interest of the river restoration community to be well-informed and able to develop stream restoration goals and projects with bridge owners and designers.

The goal of this session is to bring together a suite of disciplinary experts to present on the state-of-the-science and application of stream crossing projects that also incorporate restoration. This session will complement the invited presentation of recent bridge-related research by Dr. Peggy Johnson of Pennsylvania State University. We would like to have a 90-minute oral presentation session, followed by a moderated panel discussion involving the presenters, invited speaker, and session proposer.

LIST OF COMPONENT PRESENTERS FOR THE SYMPOSIUM:

Confirmed presenters who helped to frame and develop this session proposal and who will be submitting abstracts include: Presenter #1 (US Fish and Wildlife Service and National Marine Fisheries Service – Portland), Presenter #2 (Ayres and Associates - Fort Collins), Presenter #3 (Oregon Department of Transportation - Portland), and Presenter #4 (Washington Department of Fish and Wildlife - Olympia).

Tentative Titles:

Presenter #1: The Future of Stream Crossing Streamlining in the Pacific Northwest

Presenter #2: “Stream Stability at Highway Structures”: more than just a bridge engineers reference manual

Presenter #3: Crossing Design in Washington State: what’s new and what have we learned?

Presenter #4: Crossing Design in Oregon: making 100s of projects into one program