

# 2019 SALMON RECOVERY CONFERENCE

## SESSION DETAILS

ROOM 315-316

**MONDAY AFTERNOON**

1:00 PM – 3:00 PM

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### INVASIVE SPECIES IMPACTS TO SPECIES RECOVERY, THE ENVIRONMENT, AND ECONOMY: WASHINGTON STATE'S COMPREHENSIVE APPROACH TO PREVENTION, CONTAINMENT AND MANAGEMENT

SESSION CHAIR: JUSTIN D BUSH, STATE OF WASHINGTON RECREATION & CONSERVATION OFFICE

Since 2006, the Washington Invasive Species Council has been tasked with providing direction, planning, leadership, and coordination for combatting harmful invasive species throughout the state and preventing the introduction of others that may be potentially harmful. This session will address the known and potential impacts of invasive species to Washington state's economy and environment through the lens of species recovery. We will provide background information and summaries on invasive species issues that have been stopped and others that may be on the horizon. Success of the council and success of species recovery are intrinsically connected. Presenters representing organizations and agencies that are the first line of defense in Washington will discuss direct and indirect impacts from new and spreading invasive species with a focus on teaching salmon recovery professionals how to recognize and report new threats.

**Flowering Rush: Impacts to Salmon Recovery, the Environment and Economy**

Jenifer Parsons, Washington Department of Ecology and Jennifer Andreas, Washington State University

**Effective Methods to Revegetate Reed Canarygrass Dominated Wetlands and Riparian Areas without the use of Herbicides**

Peter Bahls, Northwest Watershed Institute

**Northern Pike are Coming and You Should be Afraid**

Joe Maroney, Kalispel Tribe of Indians

**Watershed Recovery, Reed Canarygrass and Scotch Broom — Rationale and Strategies for Investment and Action**

Jill Silver, 10,000 Years Institute

#### PRESENTATION DETAILS

Abstracts that describe each presenter's talk can be found online at <https://src.confex.com/src/2019/meetingapp.cgi>

ROOM 315-316

## MONDAY AFTERNOON

1:00 PM – 3:00 PM

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### THE FORGOTTEN FISH: RECOVERING BULL TROUT

SESSION CHAIR: ALEX CONLEY, YAKIMA BASIN FISH & WILDLIFE RECOVERY BOARD

SESSION PANELISTS: JUDY NEIBAUER, USFWS

SESSION PANELISTS: JOE MARONEY, KALISPEL TRIBE OF INDIANS

This panel discussion will focus on developing strategies to recover listed bull trout in Washington State. Bull trout were listed in 1999, but bull trout recovery efforts have often languished when compared to our impressive efforts to coordinate and invest in recovery of salmon and steelhead. Bull trout depend on the coldest and cleanest of our waters, and by protecting them we protect some of our most intact aquatic ecosystems. The bull trout listing also creates real challenges for hydropower, irrigation and development programs which need to be addressed in order to recover bull trout and benefit local economies.

The panel members will briefly review the status of bull trout in different parts of the state, and summarize the work being done to recover them and the funding sources and policy support available. We will then engage with both the panel and the audience to identify how we can work together to develop a more coordinated approach to bull trout recovery across Washington State. We will also focus on how to work with the USFWS, the states of Idaho and Oregon and diverse tribes to chart a realistic path to recovery and secure the resources and political support needed to make real progress towards delisting bull trout. We hope that this panel discussion can help identify concrete next steps for bull trout recovery in Washington State.

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BALLROOM A  
**MONDAY AFTERNOON**  
1:00 PM – 3:00 PM

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**TIME CAPSULES AND TAROT CARDS — THE INCREASING COMPLEXITY OF RESTORATION PROJECTS OVER THE LAST TWENTY YEARS AND WHAT THE FUTURE HOLDS FOR RESTORATION**

SESSION CHAIR: SHERRIE DUNCAN, SKY ENVIRONMENTAL

SESSION ORGANIZER: LISA SPURRIER, PUYALLUP AND CHAMBERS SALMON RECOVERY LEAD ENTITY

As we mark twenty years of salmon habitat restoration in the Northwest, it is important to reflect on what we have accomplished to date as well as what lies ahead. It is notable that the type and complexity of salmon habitat restoration projects have changed dramatically in scale and cost over time. Early salmon habitat restoration projects following the first Salmon Recovery Funding Board grant round were typically smaller in scale and focused on discrete factors limiting habitat structure and correcting, fish barriers. Today restoration practitioners have changed their focus to take a processed-based view of what restoration projects should look like and many projects are aimed at addressing miles of river and floodplain at the reach scale and it is not uncommon for watersheds to be somewhere in the process of removing a dam. In this session, take a trip through time with project sponsors from 1999 to 2019 and beyond. We will first explore how project types have evolved over time by looking at examples of projects that have been done over the last twenty years, beginning with simple projects and then transition into more complex, multi-benefit, multi-stakeholder projects and the challenges and opportunities that they present. With twenty years of work under our belt, what can we say, with confidence, about restoration projects looking forward to the next twenty years? Based on our experience with this work, what questions do we need to ask to make sure we are getting the most important work done and using the limited funding to get the best results for salmon? What are important considerations when striving to provide salmon the greatest possible resilience to climate change?

**Countyline Levee Setback Project: A Flood Protection Project along the Lower White River, Washington Yields Multiple Benefits**

Stephanie Shelton, King County Department of Natural Resources and Parks

**Climate Change and Sea Level Rise – Tips and Tools for Evaluating Future Conditions with Hydraulic Models**

David Cline, Shannon & Wilson

**Nez Perce Tribe Watershed Restoration - 1997-2019**

Heidi McRoberts, Nez Perce Tribe

**What it Takes to Move the Needle: Sweat, Diesel, and Jet Fuel**

Eli Asher, Cowlitz Indian Tribe

**Restoring Water Quality Through Rebuilding Hyporheic Function**

Mike (Rocky) Hrachovec, Natural Systems Design

**Breaking Down Barriers: How Science, Policy, and Community Resolve has Shaped Salmon Recovery in the Puyallup River Watershed**

Kristin Williamson, South Puget Sound Salmon Enhancement Group

**20 Years of Restoration in the NF Stilly: Changing Strategies and Lessons Learned are Shaping the Future of Salmon Recovery**

Tracy Drury, Anchor QEA and Andy Brew, Anchor QEA

**It's More Complicated Than We Thought...**

Mike Rustay, Snohomish County and Gretchen Glaub, Snohomish County

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BALLROOM B/C  
**MONDAY AFTERNOON**  
1:00 PM – 3:00 PM

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**INTERSECTIONS IN SALMON AND SOUTHERN RESIDENT KILLER WHALE RECOVERY**

SESSION CHAIRS: WHITNEY NEUGEBAUER, WHALE SCOUT/ORCA SALMON ALLIANCE

SESSION CHAIRS: COLLEEN WEILER, WHALE AND DOLPHIN CONSERVATION

SESSION CHAIRS: CINDY HANSEN, ORCA NETWORK

SESSION PANELISTS: LYNNE BARRE, NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

SESSION PANELISTS: DEBORAH GILES, WILD ORCA & UNIVERSITY OF WASHINGTON FRIDAY HARBOR LABS

SESSION PANELISTS: MISTY MACDUFFEE, RAINCOAST CONSERVATION FOUNDATION

SESSION PANELISTS: REGAN MCNATT, NOAA FISHERIES - NWFSC

SESSION PANELISTS: DAVID TROUTT, NISQUALLY INDIAN TRIBE

The unique Southern Resident killer whale (SRKW) population is critically endangered, threatened by prey depletion, pollution, and noise & disturbance. Despite years of recovery efforts, they are continuing to decline and are not successfully reproducing. The primary limiting factor to their survival is widely recognized as a lack of Chinook salmon.

Building upon the recent work of the Washington SRKW Task Force, this panel (intended to complement a separate panel focused on broader SRKW issues) will discuss recovery efforts for Chinook populations identified as high priority for SRKWs and how recommendations from the Task Force could advance those efforts, focusing on leveraging recovery efforts for the immediate and long-term survival of both species.

The panel will explore the intersection of salmon and SRKW recovery, including:

- Past challenges in achieving recovery goals.
- Additional needs identified in completed and ongoing projects.
- Policies for restoration or protection that exist but have not been implemented.
- Habitat degradation issues.
- Future opportunities to coordinate efforts.
- Specific projects, as outlined by the Task Force and additional projects proposed or underway, that may be advanced through connections to SRKWS.

The session chair (a representative from the Orca Salmon Alliance) will facilitate the discussion between SRKW and salmon experts, including representatives from the Washington Department of Fish and Wildlife, the Governor's Salmon Recovery Office, a SRKW prey specialist, a SRKW expert from the National Marine Fisheries Service (NMFS), and members of conservation organizations. We have contacted several potential presenters and secured participation from SRKW prey specialist Dr. Deborah Giles (UW and Wild Orca).

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BALLROOM D  
**MONDAY AFTERNOON**  
1:00 PM – 3:00 PM

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**CHEHALIS BASIN AQUATIC SPECIES RESTORATION PLAN –  
INSIGHTS ON BASIN WIDE INTEGRATED RESTORATION PLANNING &  
IMPLEMENTATION**

SESSION CHAIR: EMELIE MCKAIN, WASHINGTON DEPARTMENT OF FISH & WILDLIFE

The Chehalis Basin is the second largest river basin in Washington State. It is a uniquely abundant river basin, but it has suffered from reduced salmon runs and devastating flooding for decades. The State of Washington, Quinault Indian Nation, the Confederated Tribes of the Chehalis and other partners are developing an Aquatic Species Restoration Plan (ASRP) as part of a comprehensive strategy to restore the ecological health of the Chehalis River Basin. This unprecedented effort is integrating stakeholder perspectives in the creation of a process that will restore hundreds of miles of riparian habitat throughout the basin on private lands. This session will outline our approach to basin scale restoration, lessons learned from previous state and tribal efforts, and a path forward to improve the Chehalis for aquatic and semi-aquatic species, as well as the people that call this basin home.

**Introductory Remarks**

**Why the Chehalis, and Why Now?**

Emelie McKain, Washington Department of Fish & Wildlife

**Science and Restoration Planning**

Mara Zimmerman, Coast Salmon Partnership

**Funding Success: Lessons Learned Thus Far**

Steven Malloch, Chehalis Basin Board

**Large Scale Integration of Landowners and Stakeholders**

Kirsten J Harma, Chehalis Basin Lead Entity

**Informing the Plan through Implementation — Taking Early Reach Scale Action and Securing Landowner Willingness**

Tom Kollasch, Grays Harbor Conservation District

**Stakeholder Perspectives and Panel Discussion**

Emelie McKain, Washington Department of Fish & Wildlife

**Discussion**

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ROOM 315-316  
**MONDAY AFTERNOON**  
3:15 PM – 5:15 PM

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## **HATCHERIES AND HYDRO: WHAT WE'RE LEARNING AND WHERE WE'RE HEADED**

SESSION ORGANIZER: ERIK NEATHERLIN, WDFW

**Hatcheries and Recovery: Understanding the Risks and Benefits**  
Andrew Murdoch, DFW

**Trends in Abundance, Survival and Size, and the Optimization of Hatchery Releases to Maximize Adult Returns of Chinook Salmon**  
James Losee, DFW

**Estimating Hatchery Fish on the Spawning Grounds: Key Factors that Influence Carcass Recovery Probability**  
Patrick Hughes, DFW

**Monitoring Puget Sound Early Winter Steelhead Hatchery Releases**  
Bethany E Craig, Washington Department of Fish and Wildlife

**Reintroduction of Salmon into the Upper Columbia River**  
John Sirois, Upper Columbia United Tribes

**Using PIT Tag Data to Estimate Life Cycle Survival of Natural Origin Upper Columbia Spring Chinook**  
Dan Rawding, DFW

**Flexible Spill Agreement: Adapting Federal Dam Operations to New Science and Energy Market Conditions**  
Michael Garrity, DFW

**Title: Ecosystem Response to the Removal of Dams on the Elwha River: A Brief Overview**  
Mike McHenry, Lower Elwha Klallam Tribe

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BALLROOM A  
**MONDAY AFTERNOON**  
3:15 PM – 5:15 PM

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**INTEGRATING CLIMATE CHANGE ADAPTATION MEASURES INTO RESTORATION DESIGN AND RESERVE PLANNING, FOCUSING ON THE LOWER COLUMBIA RIVER**

SESSION CHAIR: CATHERINE CORBETT, LOWER COLUMBIA ESTUARY PARTNERSHIP

Over the past 20 years, over 23,758 acres have been restored or protected by regional partners, a significant effort to reverse the trajectory of habitat loss in the lower Columbia River. In 2016 we adopted resource-based habitat coverage targets that describe the quantity, types, and locations for recovery of native habitat to meet an overall goal of *historical habitat diversity* and protection of biodiversity. While these targets are aggressive, an acknowledged problem with them is the focus on recovering the *historical habitat template* despite ample research that documents that the past no longer serves as a guide for maintaining biodiversity into the future. A growing body of research clearly documents that traditional methods of conservation will not be effective, nor protective of biodiversity, as rapid, directional changes in environmental conditions are disrupting critical spatial and temporal relationships that species have adapted to over millennia. Examples include shifts or expansions of species' ranges; changes in life-cycle events such as leafing out, blooming, breeding, and migrating. Conservation increasingly will need to manage for novel climates, ecological conditions, and species assemblages. As a result, integrating climate change adaptation measures into conservation programs should be an *intentional* process that supports change, not just persistence, which ultimately supports transformation of ecosystems and species shifts.

This session will provide an overview of approaches for integrating shifting climate conditions into conservation planning, including our ability to meet our habitat coverage targets with sea level rise. Additionally, we will present how we've started integrating climate adaptation measures into individual restoration project designs, focusing on the lower Columbia River. Presentations will include projects designed to restore cold water refuges through enhancing confluence areas and alluvial fans and integrate living shorelines in flood control measures. Additional presentations will discuss specific design criteria needs for infrastructure and hydrologic reconnection/fish access projects.

**Integrating Climate-Smart Conservation into our Ecosystem Restoration Program for the Lower Columbia River**

Catherine Corbett, Lower Columbia Estuary Partnership

**Assessing the Resiliency of Lower Columbia River Wetlands to Climate Induced Sea Level Rise**

Keith Marcoe, Lower Columbia Estuary Partnership

**Enhancing Cold Water Refuges at Small Tributaries in the Lower Columbia River**

Chris Collins, Lower Columbia Estuary Partnership

**Restoration Using Multiple Climate Adaptation Measures for a 1,000-acre Floodplain Section of the Lower Columbia River**

Curtis Loeb, Wolf Water Resources

**Incorporating Future Climate Predictions into Today's Ecosystem Restoration Design**

Caitlin Alcott, Inter-Fluve and Matt Cox, Inter-Fluve

**Integrating Climate Change Projections into Culvert Design and Research**

Jane B Atha, Washington Department of Fish and Wildlife

**Columbia-Pacific Passage Habitat Restoration**

Jason R Smith, Columbia River Estuary Study Taskforce

**Designing Habitat for a Changing Climate: A Quantitative Approach**

Joseph M Parzych, Inter-Fluve

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BALLROOM B/C  
**MONDAY AFTERNOON**  
3:15 PM – 5:15 PM

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**JUVENILE SALMON AND ESTUARY ECOSYSTEM FUNCTION ACROSS DELTAS AND RESTORATION PROJECTS IN PUGET SOUND: WHAT HAVE WE LEARNED, WHERE ARE WE GOING?**

SESSION CHAIR: TISH L CONWAY-CRANOS, WASHINGTON DEPARTMENT OF FISH AND WILDLIFE

Puget Sound has lost over half of its historic tidal wetlands, and restoring this habitat is an integral component of Chinook salmon recovery and resilience. Over the past twenty years, dozens of restoration projects have restored over 3,000 acres of tidal wetland habitat in Puget Sound. In this session we will explore how juvenile salmon are using estuary habitats in Puget Sound, how estuary ecosystems are responding to restoration, and how we might use this information to envision the next generation of estuary restoration projects. Individual speakers, many of whom have received funding from the Estuary and Salmon Restoration Program (ESRP) Learning Program, will present on estuary use by juvenile salmon, and ecosystem responses to restoration at multiple Puget Sound sites, including the Skagit, Snohomish, Skokomish, and Nisqually estuaries. Specific ecosystem responses presented will include sediment transport and deposition, vegetation development, and invertebrate community changes, as well as juvenile salmonid abundance, distribution, growth, and diets. Together these insights will paint a holistic picture of fish and habitat responses to estuary restoration, as well as provide direction for how best to plan future estuary restoration projects and identify the most pressing remaining questions.

**Successful Juvenile Life History Strategies in Returning Adult Chinook from Five Puget Sound Populations**  
Lance Campbell, Washington Department of Fish and Wildlife

**Landscape Features and Density Dependence in Tidal Delta Habitats: Juvenile Chinook in Four Puget Sound Estuaries**  
Correigh Greene, NOAA/Northwest Fisheries Science Center and Eric Beamer, Skagit River System Cooperative

**Tidal Channel Erosion Rates Depend on Marsh Restoration Site Size**  
Greg Hood, Skagit River System Cooperative

**Juvenile Chinook Habitat Restoration on the Delta of the Fraser River Estuary**  
Misty MacDuffee, Raincoast Conservation Foundation

**A Decade of Post–Restoration Monitoring in the Nisqually River Delta: Structure, Function, and Benefits for Juvenile Salmon**  
Melanie Davis, US Geological Survey

**Habitat Structure and Function Following Estuary Restoration in the Skokomish**  
Lisa Belleveau, Skokomish Indian Tribe

**The Union River Estuary Restoration: Five Years Later**  
Mendy A Harlow, Hood Canal Salmon Enhancement Group and Clayton David, HCSEG

**15 Years of Estuary Restoration in the Dosewallips Delta**  
Micah M Wait, Wild Fish Conservancy

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BALLROOM D  
**MONDAY AFTERNOON**  
3:15 PM – 5:15 PM

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**ASSESSING AND ADDRESSING THREATS TO ESA-LISTED SALMONIDS AT ECOSYSTEM-SCALES**

SESSION CHAIR: STEVE MANLOW, LOWER COLUMBIA FISH RECOVERY BOARD

Pacific salmon evolved and adapted to diverse ecosystems, relying on habitat from headwater streams to large rivers, estuaries and oceans to complete their life histories. The ecosystems that salmon and steelhead rely on are often highly altered today, as roads, development, hydropower, timber harvest and agriculture continually reshape habitat conditions. Population abundance, productivity and diversity are also altered through harvest and hatchery impacts, as well as ocean conditions and changing predator/prey relationships. These threats led to the decline and subsequent Endangered Species Act listing of many salmon twenty years ago. Today, managing these “all-H” threats is the key focus of Washington’s locally developed and state and federally adopted recovery plans. As some species near ESA delisting and others struggle to progress, it is essential to re-assess threats across the H’s, learn from successes and challenges, and adaptively manage recovery efforts.

Presentations today cover integrative approaches to recovering and sustaining salmon by reducing or eliminating threats, and provide pathways to improve the integration and strategic application of recovery and management plan programs. Topics include: all-H reporting in the Upper Columbia region; integrating bull trout and salmon recovery in the Mid Columbia; an assessment of regulatory and restoration programs as well as hatchery and harvest reform in the Lower Columbia; a perspective from the Washington coast; and, ESA delisting considerations from the Hood Canal and NOAA.

**Recovery and Delisting Species Under the Endangered Species Act**

Gary Rule, NOAA Fisheries

**A Decision Pathway for the Recovery/Delisting of Hood Canal and Eastern Strait of Juan de Fuca Summer Chum Salmon**

Scott Brewer, Hood Canal Coordinating Council

**Coast Salmon Partnership: Integrating People, Plans, and Knowledge into New Salmon Habitat**

Mara Zimmerman, Coast Salmon Partnership

**Hydropower in Salmon Recovery — the Forgotten “H”**

Florian Leischner, Tacoma Power and Phil Sandstrom, Tacoma Power

**Tracking Hatchery and Harvest Reform to Support Recovery in the Lower Columbia Region**

Amelia Johnson, Lower Columbia Fish Recovery Board and Steve Manlow, Lower Columbia Fish Recovery Board

**An Assessment of Recovery Partner Implementation of Lower Columbia Recovery Plan Programs: an EF Lewis River Pilot Study**

Katie Blauvelt, PC Trask and Associates

**Integrating Bull Trout and Salmon Recovery in the Mid—Columbia**

Alex Conley, Yakima Basin Fish & Wildlife Recovery Board

**Is the Key to Success a 5<sup>th</sup> “H” (Humans)? Seeking “Win-Win” Opportunities with our All-H Partners**

Greer Maier, Upper Columbia Salmon Recovery Board

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EXHIBIT HALL A  
**MONDAY AFTERNOON**  
5:15 PM – 7:15 PM

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**POSTERS**

**Investigation of Oxidative Stress in Juvenile Coho Salmon (*Oncorhynchus kisutch*) Exposed to Highway Runoff**

Stephanie I Blair, Washington State University Puyallup Research and Extension Center

**Funding Woes and Federal Uncertainty: Finding Donors, Volunteers, and Citizen Scientists**

Jacob Carleson, Western Washington University and Katrina Campbell, Western Washington University

**WDFW and NRCS Partnership: Working Together to Improve Fish Passage and Aquatic Habitat**

Casey Costello, Washington Department of Fish and Wildlife

**The Hood Canal Steelhead Project: An Experiment to Assess the Impacts of Supplementation on Natural Steelhead Populations**

Katy Doctor, NOAA Fisheries NWFSC

**Carpenter Creek Estuary Restoration Monitoring Plan: 13+ Years of Citizen Science in a Puget Sound Pocket Estuary**

Melissa A Fleming, Stillwaters Environmental Center and Joleen Palmer, Stillwaters Environmental Center

**Developing a Field Study on the Impacts of Reed Canarygrass (*Phalaris arundinacea*) to Stream Temperature, DO<sup>2</sup>, and Flow**

Jill Silver, 10,000 Years Institute and Marina Hein, 10,000 Years Institute

**Assessment of Floodplain Conditions across Puget Sound: An Emerging Tool for Tracking Investments and Communicating Status**

Colin Hume, Washington Department of Ecology and Jennifer L Burke, Puget Sound Partnership

**Accelerating Forest Succession for the Restoration of River Corridors on the Novel Coarse Terraces along the Elwha River**

James Kardouni, Western Washington University and Jenise M Bauman, Western Washington University

**Fish Passage Enhancement Program in Thurston County**

Jeanne Kinney, Thurston County Public Works

**Skookum Edfro Phase 2 Instream Restoration Project – An Innovative Approach for Access to Build Habitat**

Alex Levell, Lummi Nation and Kelley Turner, Lummi Nation

**Effectiveness Monitoring of Large Wood Restoration Projects in the Nooksack Watershed**

Michael R Maudlin, Nooksack Tribe and Treva Coe, Nooksack Tribe

**Salmon Run Nature Park: Stream Restoration, Habitat Improvement, Park Development, and Interpretive Design**

Logan McClish, The Watershed Company

**Eight Years of Knotweed Control in the Upper Skagit Watershed**

Bengt Miller, Skagit Fisheries Enhancement Group

**A Year of Wake Stranding Surveys: Lessons Learned**

Hannah L Mortensen, Plas Newydd LLC

**Creative Approaches to Salmon Recovery: Whale Watchers as Volunteer Salmon Habitat Restoration Technicians**

Whitney Neugebauer, Whale Scout

**Incorporating Climate Change and Sea Level Rise Effects on Puget Sound Nearshore Restoration Efforts – A Practical Approach**

Aaron Porter, Mott MacDonald and Shane Phillips, Mott MacDonald

**Assessing Coho Salmon (*Oncorhynchus kisutch*) Sensitivity to Stormwater Toxicity**

Jasmine Prat, Washington State University

**Incorporating Aquatic Habitat Enhancement Elements during Emergency Highway Repairs**

Garrett Jackson, Washington State Dept. of Transportation and Cygnia Rapp, Washington State Dept. of Transportation

**Using River Complexity Index to Adaptively Manage a Restoration Project on the Tucannon River**

Zach Seilo, Confederated Tribes of the Umatilla Indian Reservation and Kris Fischer, Confederated Tribes of the Umatilla Indian Reservation

**Translating the Salmon Story for a Young Audience**

Betsy Severtsen, Anchor QEA

**Where the Wild Things Were: Amphibian Surveys for Stream Health in Kitsap County, WA**

Caitlin M Sidhu, Western Washington University and Jenise M Bauman, Western Washington University

**Engaging Local Communities in Sea Level Rise Adaptation: Opportunities to Improve Shoreline Resiliency**

Tina Whitman MS, Friends of the San Juans

**Shoreline Habitat Protection: an Essential Salmon Recovery Strategy**

Tina Whitman MS, Friends of the San Juans

**Monitoring Temperature to Explore the Physiological Potential of Pacific Herring in Puget Sound**

Holly Young, Washington Department of Ecology and Christopher Krembs, Washington Department of Ecology

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ROOM 315-316  
**TUESDAY MORNING**  
8:00 AM – 10:00 AM

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## **ONE SIZE DOES NOT FIT ALL: PLANTING RIPARIAN BUFFERS IN WORKING AGRICULTURAL LANDSCAPES**

SESSION CHAIR: BETH LEDOUX, KING COUNTY

Salmon recovery has been a Puget Sound priority for over a decade and the 14 Chinook Recovery Plans developed by Puget Sound Watersheds signify a strong commitment to that effort. A primary recommendation of these salmon plans is to restore and enhance streams and rivers with substantial riparian buffers to improve water quality and restore natural habitat processes for salmon. A rapidly growing regional population coupled with a burgeoning interest in local food and food security have amplified the need to resolve longstanding conflicts. The conflict is particularly acute in floodplain areas that are critical for salmon and also feature some of the best agricultural soils in Washington. In the last several years, intensive efforts have been initiated to integrate these mandates in ways that result in net gains for both salmon and farms. Intensive work has been occurring in Snohomish and King County, along with other Puget Sound watersheds, to think through how to create a locally derived strategy to implement buffer restoration that is not only science based, but also explicitly incorporates consideration of the opportunities and constraints inherent in an active agricultural landscape. This session will share the work happening on the ground to try and support both fish and farms and how riparian buffers can do both.

### **Habitat Loss, Restoration, and Treaty Rights — Applying Treaty Rights at Risk in the Context of Variable Width Buffers**

Colin M Wahl, Tulalip Tribes

### **Riparian Buffers: Perspectives from the Land**

Melissa Borsting, King County

### **Using Riparian Science to Establish Recommendations for Variable Width Buffers in the Snoqualmie River Valley**

Beth leDoux, King County

### **The Voluntary Stewardship Program — Protecting Critical Areas and Maintaining Agricultural Viability**

Bill Eller, Washington State Conservation Commission

### **Reecer Creek Floodplain Restoration — Reviewing Restored Channel and Riparian Development**

Katrina Strathmann, Mid-Columbia Fisheries Enhancement Group and Rebecca Wassell, Mid-Columbia Fisheries Enhancement Group

### **Changing Rules in Restoration: How New Policies and Permits have Impacted RFEG Riparian Restoration Strategies**

Kelsey Taylor, Skagit Fisheries Enhancement Group

### **Riparian Buffer Flexibility Allows for Restoration Success in Woods Creek**

Cindy Dittbrenner, Snohomish Conservation District

### **Integrated Riparian Restoration in the Stillaguamish and Snohomish Watersheds**

Kristin Marshall, Snohomish Conservation District

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BALLROOM A  
TUESDAY MORNING  
8:00 AM – 10:00 AM

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## URBAN STORMWATER THREATS AND CLEAN WATER STRATEGIES TO CONSERVE AND RECOVER SALMON

SESSION CHAIR: NATHANIEL L SCHOLZ, NOAA FISHERIES, NORTHWEST FISHERIES SCIENCE CENTER

In the Pacific Northwest, as in other coastal areas of the United States, non-point source pollution is the foremost water quality threat to aquatic species, populations, communities, and ecosystems. Human population growth continues to drive development and land conversion within salmon-supporting watersheds, increasing both imperviousness and corresponding toxic stormwater runoff. The Puget Sound region, for example, is expected to add more than a million people by 2030. This session will showcase recent research demonstrating that untreated urban runoff is highly toxic to the freshwater life stages of salmon, as well as their prey. The focus will be primarily on coho (*Oncorhynchus kisutch*) as a sentinel species for the impacts of stormwater, as well as the effectiveness of green infrastructure and other clean water strategies designed to remove (filter) contaminants and protect salmon health. The presentations will center on a well-described urban mortality syndrome (also known as coho pre-spawn mortality), whereby adult coho returning to restoration sites in urban streams die before spawning. This line of research began nearly 20 years ago, and has since provided a significant lesson about the potential for toxic runoff to undermine physical habitat restoration efforts (i.e., create ecological traps). Looking to the future, the session will also explore recent solutions-oriented studies on the effectiveness, affordability, durability, replicability, and scalability of green infrastructure. As a basis for action, spatially-explicit vulnerability maps for the coho urban mortality syndrome are now available for the entirety of the Puget Sound basin (<https://esajournals.onlinelibrary.wiley.com/doi/10.1002/eap.1615>). These maps are intended to catalyze local engagement and guide pollution reduction strategies throughout the region. Lastly, the best available science is increasingly pointing to motor vehicles as the primary source of toxics in urban runoff. The session will feature state-of-the-art analysis (high resolution mass spectrometry) to resolve the literally thousands of distinct chemicals in urban stormwater.

### **Green Stormwater Infrastructure to Improve Water Quality in Salmon Habitats**

Jenifer K McIntyre, Washington State University

### **Elevated Contaminants in Resident Chinook Salmon Pose a Threat to Salmon Reproduction and to People and Whales that Eat Them**

Sandra O'Neill, WA Dept. Fish and Wildlife and Andrea Carey, WA Dept. Fish and Wildlife

### **Using High-Resolution Mass Spectrometry to Identify Organic Contaminants Linked to Urban Stormwater Mortality Syndrome**

Edward P Kolodziej, Center for Urban Waters

### **The Urban Mortality Syndrome: Juvenile Coho Salmon as Surrogates for Adult Spawners**

Jay W Davis, U.S. Fish and Wildlife Service

### **Current and Future Vulnerability Mapping for the Coho Urban Mortality Syndrome in Puget Sound**

Blake E Feist, NOAA Fisheries, Northwest Fisheries Science Center

### **New Science Informing Endangered Species Management**

Doug Osterman, WRIA 9

### **Aligning Land Use and Water Quality Across a Gradient of Coho Mortality in Puget Sound**

Jessica I Lundin, NOAA Fisheries, Northwest Fisheries Science Center

### **Suspect and Non-Target Screening for Contaminants of Emerging Concern in Puget Sound**

Zhenyu Tian, UWT Center for Urban Waters

#### PRESENTATION DETAILS

Abstracts that describe each presenter's talk can be found online at

<https://src.confex.com/src/2019/meetingapp.cgi>

BALLROOM B/C  
**TUESDAY MORNING**  
8:00 AM – 10:00 AM

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**MARINE FOOD WEB AND HABITAT INTERACTIONS IN THE SALISH SEA**

SESSION CHAIR: IRIS KEMP, LONG LIVE THE KINGS

Salmon are an integral part of complex food webs spanning multiple habitats. This session predominantly focuses on the marine environment: investigating salmon and steelhead growth, distribution, and survival patterns, and the physical and biological factors that drive them. Studies in this session have assessed relationships between salmon, steelhead, their prey, and their predators, explored top-down versus bottom-up controls on juvenile salmon growth and survival, and modeled trophic relationships in an ecosystem context. Much of the work presented in this session results from the Salish Sea Marine Survival Project (SSMSP) – an interdisciplinary US-Canada research effort that began in 2014 and is now in its final year. The SSMSP has leveraged human and financial resources from the United States and Canada to determine the most significant factors affecting the survival of juvenile chinook, coho and steelhead in Puget Sound and the Strait of Georgia. This comprehensive, collaborative effort addresses key uncertainties impeding salmon recovery and sustainable fisheries in our shared waters of British Columbia and Washington State and will lead to chinook, coho, and steelhead recovery management actions and improved adult salmon forecasting, addressing Tribal Treaty Rights and Endangered Species Act obligations. Presenters in this session will discuss results of scientific research and monitoring, and outline recommendations emerging from these results that relate to management actions and ecosystem recovery.

**Ecosystem Indicators Development for Steelhead Trout and Coho and Chinook Salmon**

Kathryn Sobocinski, NOAA/LLTK

**Effect of Multiple Pressures on Early Marine Survival of Juvenile Salmon in Puget Sound**

Hem Nalini Morzaria-Luna, Long Live the Kings

**Bottom-up Processes Affecting Marine Survival of Salmon in the Salish Sea**

Dave Beauchamp, US Geological Survey

**Population Specific Consumption of Pacific Herring in Juvenile and Sub-Adult Chinook Salmon in the Salish Sea**

Josh Chamberlin, NOAA/Northwest Fisheries Science Center and Eleni Petrou, University of Washington, Schol of Aquatic and Fishery Sciences

**Ecological Factors Affecting the Early Marine Survival of Puget Sound Steelhead Smolts**

Barry Berejikian, NOAA Fisheries

**Characterizing Impacts of the Hood Canal Bridge on Migrating Steelhead Smolts using Acoustic Telemetry**

Megan Moore, NOAA and Barry Berejikian, NOAA Fisheries

**Underwater Video Illustrates that the Hood Canal Bridge Impedes Migration of Salmonids**

Hans Daubenberger, Port Gamble S'Klallam Tribe and Emily Bishop, Westward Ecology

**Restoration Benefits Below the Surface: Developing an Empirical Basis for Connecting Shoreline Restoration to Salmon Recovery**

Genoa Sullaway, NOAA NWFSC and University of Washington

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BALLROOM D  
**TUESDAY MORNING**  
8:00 AM – 10:00 AM

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## COMMUNICATING SALMON RECOVERY

SESSION CHAIR: TRICIA SNYDER, YAKIMA BASIN FISH AND WILDLIFE RECOVERY BOARD

We've made incredible progress in salmon recovery over the past twenty years. One of the challenges we face now is communicating that progress. Effective communication is critical to ensure legislative support, build public buy-in, and attract additional sources of funding. However, many of us in the salmon recovery world find communication and outreach challenging. Some don't feel they have the capacity to conduct outreach and some aren't sure where to even start. This session will focus on some of those concerns, share lessons we've learned, and determine where we need to go next.

### **Communication Planning 101**

Tricia Snyder, Yakima Basin Fish and Wildlife Recovery Board

### **Big Communications on a Little Budget**

Melissa Speeg, Kittitas Conservation Trust

### **Diverse Stakeholders and Communicating Salmon Recovery**

Kelsey Green, American Rivers

### **Communicating with Tribes: Where Do you Start?**

Brady Kent, Yakama Nation

### **From Restoration to Education: Closing the Loop on Salmon Recovery**

Claire Williamson, South Puget Sound Salmon Enhancement Group and Jerilyn Walley, South Puget Sound Salmon Enhancement Group

### **Engaging the Community in Salmon Restoration**

Landon Shaffer, Mid-Columbia Fisheries Enhancement Group and Emily Smith, Mid-Columbia Fisheries Enhancement Group

### **Restoration Landscape Narratives: Facing an Uncertain Future Using Active Community Dialog, Technology & Resiliency Planning**

Camilla Popp, Hood Canal Salmon Enhancement Group and Peter Hummel, Anchor

### **Achieving Zero Watershed Impacts through Salmon-Safe**

Ellen K Southard, Salmon Safe

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ROOM 315-316  
**TUESDAY AFTERNOON**  
10:15 AM – 12:15 PM

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## HOW MUCH SPACE DOES A RIVER NEED? ESTABLISHING ECOLOGICAL CORRIDORS FOR LARGE-SCALE RESTORATION AND MONITORING

SESSION CHAIR: IAN SINKS, COLUMBIA LAND TRUST

The aquatic habitats sustained by streams and rivers extend outside of a bank-full channel. Thus, this session focuses on defining the spatial requirements for rivers to create and sustain a diverse range of habitat types as the foundation to achieving long-term restoration goals. The physical space available to a river influences fluvial processes and the diversity and quantity of habitat that can form. Constraining the space available to a river eliminates the processes needed to form and sustain the unique habitats upon which salmonids and many other species depend, including side channels, oxbow lakes, and emergent wetlands.

This session will explore how restoration practitioners have approached project scale and how decisions of appropriate project scale can influence the effectiveness of restoration actions. What is the minimum space needed to restore “properly functioning conditions” that can truly sustain the ecosystems upon which salmon depend? We define an “ecological corridor” as the minimum space a historically unconfined stream or river needs to sustain the suite of habitats it once had prior to human disturbance. The concept of a minimum footprint for restoration is based on understanding the key formative processes for aquatic habitat in a given reach, and is useful for estimating spatial scales and structural requirements of these habitat-forming processes. Once the space and structural components that enable natural river processes to create and maintain diverse habitat types are understood, that knowledge can be used to plan and implement effective protection and restoration actions to achieve salmon recovery.

This session includes presentations about the concept of an ecological corridor, methods for delineation, and approaches for monitoring to evaluate the formation and diversity of habitats. The session will also include insights into land acquisition, working with land owners and stakeholders, and experiences related to establishing large scale restoration corridors in fluvial networks.

### **MAGA: Making Abernathy (Creek) Great Again**

Eli Asher, Cowlitz Indian Tribe

### **Advances in Monitoring of Large-Scale Restoration Efforts**

Jennifer O'Neal, Natural Systems Design

### **Restoring Channel Processes and Habitat on the Alluvial Fan of Illabot Creek**

Devin Smith, Skagit River System Cooperative

### **Establishing a Fluvial Ecological Corridor for the Lower White River in the City of Sumner, WA**

Doug Beagle, City of Sumner

### **Defining Ecological Corridors in Fluvial Networks for Salmon Recovery Assessment, Planning, and Process-Based Restoration**

Tim Abbe, Natural Systems Design

### **Quantitative Tools to Assess Current and Historic Floodplain Connectivity in the Skookumchuck Watershed**

Susan Dickerson-Lange, Natural Systems Design

### **Combining Landowner Outreach and Geomorphic Data to Identify Floodplain-Scale Restoration Potential in Chimacum Creek**

Sarah Doyle, North Olympic Salmon Coalition

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BALLROOM A  
**TUESDAY AFTERNOON**  
10:15 AM – 12:15 PM

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**FISH PASSAGE: SOMETHING FOR EVERYONE, TOOLS, METHODS,  
AND FUNDING OPTIONS**

Several state and federal agencies offer competitive grant funding for fish passage identification and correction. This panel will provide an overview of the programs' goals, eligibility criteria, funding levels, and geographic focus while leaving time for questions and discussion between audience and panel. Panel members include representatives from the Brian Abbott Fish Barrier Removal Board, the U.S. Fish and Wildlife Service National Fish Passage Program, the Salmon Recovery Funding Board, the Family Forest Fish Passage Program, and the U.S. Department of Agriculture Natural Resource Conservation Service.

**Removing Powerdale and Middle Fork Nooksack River Dams: Designing Riverbeds for Fish Passage in High Energy Environments**

Paul DeVries, R2 Resource Consultants

**Winning the Upstream Battle — A Novel GIS Tool for Prioritizing Fish Passage Barriers from the Upper Columbia**

Greer Maier, Upper Columbia Salmon Recovery Board

**Design Considerations for Fish Passage through Floodgates: How to Apply WDFW's *Water Crossing Design Guidelines***

Tom Slocum, Washington Conservation Districts NW Engineering Program

**Fish Passage Grant Funding Panel**

Justin Zweifel, Washington Dept. of Fish / Wildlife and Tara Galuska, Recreation and Conservation Office and Melissa Erkel, Washington Dept of Fish and Wildlife and Dave Caudill, Washington State Recreation and Conservation Office and Marc Duboiski, Washington State Recreation and Conservation Office and Miranda Plumb, Washington Dept of Fish and Wildlife

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BALLROOM B/C  
TUESDAY AFTERNOON  
10:15 AM – 12:15 PM

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## ADVANCES IN TIDAL HABITAT RESTORATION PLANNING

SESSION CHAIR: PAUL SCHLENGER, ENVIRONMENTAL SCIENCE ASSOCIATES

Restoration in tidal environments requires different tools to inform the design compared to freshwater environments. The hydraulic processes acting on the habitats are different, the size and behaviors of juvenile salmonids using these habitats are different, and even the major stressors affecting habitat quality are different. This session will describe emerging science and new tools focused on improving the efficiency and effectiveness of restoration in tidal environments. Several projects are being conducted to provide information to refine tidal restoration site selection and improve the design process. In this session, presentations will represent a broad range of disciplines working together to restore salmon habitat through scientific studies and science-based design. Presentation topics will include:

New information on fish behavior in tidal environments and a comparison of natural and modified tidal channel openings through the lens of fish passage conditions.

- Information will be presented on tidal channel geometry from reference pocket estuaries and the application of these data to restoration design and design guidance.
- A cost-effective approach to scaling site restoration design approaches using commonly available dataset.
- A case study on tidal channel evolution from the Leque Island restoration project with recommendations for design.
- Long-term tidal wetland restoration monitoring in Lower Columbia River and implications for restoration site selection and design.
- New information on identifying restoration priority sites for restoring coastal stream mouths along Puget Sound shores with a railroad will also be presented.

### **Failure or Success? Implications of Long-term Tidal Wetland Restoration Monitoring in Lower Columbia River**

Sarah Kidd, Lower Columbia River Estuary Partnership and Matt Schwartz, Lower Columbia River Estuary Partnership

### **Data is Not Enough: The Importance of Community Engagement in Public Land Restoration on the Lower Columbia River**

Alex H Uber, WDFW

### **An Assessment of Juvenile Hood Canal Summer Chum Use of Nearshore Habitat at Multiple Scales**

Micah M Wait, Wild Fish Conservancy and Adrian M Tuohy, Wild Fish Conservancy

### **Juvenile Salmon Movement Related to the Tide Cycle: A Pilot Study to Inform Tidal Fish Passage in Puget Sound — Part 1**

Doris Small, Washington Dept Fish and Wildlife and Pad Smith, Washington Dept Fish and Wildlife

### **Juvenile Salmon Movement Related to the Tide Cycle: A Pilot Study to Inform Tidal Fish Passage in Puget Sound — Part 2**

Pad Smith, Washington Dept Fish and Wildlife and Doris Small, Washington Dept Fish and Wildlife

### **The Influence of Tidal Channel Geometry on Pocket Estuary Restoration Design**

Jessica Côté, Blue Coast Engineering

### **Applying Tidal Landform Scaling to Habitat Restoration Planning, Design, and Monitoring: Leque Island & Zis a Ba Case Studies**

Greg Hood, Skagit River Systems Cooperative

### **Prioritization of Coastal Streams and Embayments Along Puget Sound Shores with a Railroad**

Paul Schlenger, Environmental Science Associates

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BALLROOM D  
**TUESDAY AFTERNOON**  
10:15 AM – 12:15 PM

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**IT TAKES A VILLAGE: COMMUNICATING SALMON RECOVERY AND INTERSECTIONALITY**

SESSION CHAIR: ELOISE S HARRIS, PUGET SOUNDKEEPER ALLIANCE

SESSION PANELISTS: ELLEN K SOUTHARD, SALMON SAFE

SESSION PANELISTS: JAMES RASMUSSEN, DUWAMISH RIVER CLEANUP COALITION/TAG

The purpose of this session is to provide insight on the challenges and strategies involved in communicating Salmon Recovery to general audiences, with special emphasis on communities and groups outside of conservation, research, and environmental networks. Campaigns led by the Puget Soundkeeper Alliance, Salmon Safe, Stewardship Partners, and other community-based non-profit advocacy organizations will be reviewed, providing an entryway into thoughtful conversations on strategies and tactics that motivate legislative action and engagement by the general public. The ways in which communications and outreach strategists engage with policymakers, researchers, and scientists and the need for an intersectional and multi-platform approach to engage a diverse and broad base of supporters who understand the importance of salmon recovery will also be discussed. Lessons learned and best practices will be shared, in addition to a Q & A for audience members. By the end of the session, if there's interest in continuing the discussion, attendees will be invited to join in a Communications for Salmon Recovery Working Group to help further outreach goals within the region.

**PRESENTATION DETAILS**

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ROOM 315-316

**TUESDAY AFTERNOON**

2:15 PM – 4:15 PM

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## **ALLUVIAL WATER STORAGE: LOSSES FROM CHANNEL INCISION AND POTENTIAL FOR RESTORATION**

SESSION CHAIR: MICHAEL KAPUTA, CHELAN COUNTY NATURAL RESOURCE DEPARTMENT

In the context of growing water shortages from climate warming and an urgent need for innovative approaches to accommodate water supply for growing populations, the purpose of this session is to explore the connection between channel incision, alluvial water storage, and salmon habitat restoration. Session presentations will include recent advances in science and policy related to restoring the natural water storage functions of streams. The valley bottoms that historically served as a reservoir for both sediment and water supported vibrant riparian forests, floodplain wetlands, corridors for fish and wildlife, and stream temperatures and flow regimes supportive of native salmonids. As we have learned over the past 20 years of river restoration and salmonid habitat recovery efforts, the legacy of in-channel wood removal, timber harvest, splash damming, road building, and channel straightening is the down-cutting of stream channels and the transport of large quantities of sediment out of the valley network, resulting in channel incision. The cumulative effect of channel incision is reduced in situ water storage, drier valley bottoms, and lowered streamflows during the summer. Several scientific studies in California have demonstrated that stream restoration can lead to increases in groundwater storage, increases in baseflow of up to 50%, and decreases in stream temperature of up to 3 °C.

Thus, stream and floodplain restoration may offer a multi-benefit approach to increase water storage at a fraction of the cost and impact of traditional water storage projects. This session will explore this connection between channel incision and increased water storage and consider the role of floodplain restoration to the future direction of salmon recovery in the Pacific Northwest, including recommendations for integrative actions.

### **Stream Restoration as a Strategy to Address Water Scarcity**

Michael Kaputa, Chelan County Natural Resource Department

### **Low-Tech Restoration to Treat Structurally Starved Streams — What is it and Why Do We Need to Do a Lot More of it?**

Stephen Bennett, Utah State University

### **Why Wood Restoration Matters? Changes in Wood Loading on Olympic Peninsula Streams**

Mike McHenry, Lower Elwha Klallam Tribe and Tim Abbe, Natural Systems Design

### **Going Big With Large Wood: An Example of Landscape Scale Restoration in the Teanaway Community Forest**

Ryan DeKnicker, Yakama Nation

### **Identifying and Quantifying Restorable Water Storage in the Wenatchee**

Susan Dickerson-Lange, Natural Systems Design

### **Channel Incision and the Loss of Water Storage in Drainage Networks**

Tim Abbe, Natural Systems Design

### **Could Beaver Dams Buffer Water Storage Losses from Declining Snowpacks?**

Konrad Hafen, University of Idaho

### **Restoration of Urban Ravines to Increase In-Situ Storage of Sediment and Water**

Maggie Stepp, Natural Systems Design

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BALLROOM A  
TUESDAY AFTERNOON  
2:15 PM – 4:15 PM

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## DIFFERENT MONITORING APPROACHES FOR ADAPTIVE MANAGEMENT AND SALMON RECOVERY

SESSION CHAIR: STACY POLKOWSKE, WA DEPARTMENT OF ECOLOGY

This session explores different monitoring approaches designed to answer various questions about project success, changing watershed conditions, dynamic fish populations, and adaptive management. We cover different monitoring efforts for project effectiveness, habitat status and trends, and intensively monitored watersheds. We also take a broader look at coast-wide salmon survival and how the Oregon Watershed Enhancement Board (OWEB) is employing a framework for monitoring progress of their Focused Investments Partnerships (FIPs).

The session starts with a brief overview, key results, and lessons learned from SRFB's long-term project effectiveness monitoring program. We present other recent and ongoing monitoring efforts including: a watershed-scale effectiveness monitoring study in the Newaukum River Watershed, a study of how large wood placement affects a stream ecosystem and coho production on the Oregon coast, and a review of what we are learning from the Intensively Monitored Watershed in the Lower Columbia. Department of Ecology provides an update on their statewide habitat status & trends efforts and how collaborators can use tools from the program to support their own studies. Another presentation focuses on results from the first statewide bioassessment and the untapped potential of using benthic macroinvertebrates to learn about watershed conditions. The session also zooms out to look at Northeast Pacific Chinook and Steelhead survival rates over the past half century and the forces affecting salmon returns. Finally, OWEB shares their FIP strategic monitoring framework developed to track progress and adjust implementation strategies as needed to achieve their goals.

Overall this session considers the past, present and future ways of evaluating our success, solving problems and adapting from lessons learned. Presenters will demonstrate different ways to display and visualize monitoring results to engage the audience and share useful monitoring information with the salmon recovery community.

### **Regional Restoration Evaluation: Lessons from the Salmon Recovery Funding Board's Project Effectiveness Monitoring Program**

Phil Roni, Watershed Sciences Lab, Cramer Fish Sciences

### **Watershed Scale Effectiveness Monitoring to Support Clean Water Act and Salmon Recovery Objectives**

Scott Collyard, Washington Dept of Ecology

### **Fish and In-Stream Habitat Responses to Habitat Restoration Treatments in the Lower Columbia IMW Complex**

Jamie Lamperth, Washington Department of Fish and Wildlife

### **The Mill Creek (OR) Study: Assessing the Effects of Large Wood Placement on a Stream Ecosystem**

Evan Hayduk, Midcoast Watersheds Council

### **Watershed Health Monitoring: Standardized Monitoring Methods and Support for Cooperators**

Glenn Merritt, Department of Ecology, Environmental Assessment Program

### **The First Statewide Stream Macroinvertebrate Bioassessment in Washington State with Analysis for Multiple Stressors**

Chad Larson, Washington Dept of Ecology

### **The Coast-Wide Collapse in Northeast Pacific Chinook and Steelhead Survival—Missed Opportunities in Salmon Conservation?**

David W Welch, Kintama Research Services Ltd and Erin L Rechisky, Kintama Research Services Ltd

### **Building a Foundation for Measuring Progress – Oregon Watershed Enhancement Board's Focused Investment Partnerships**

Ken Fetcho, Oregon Watershed Enhancement Board

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BALLROOM B/C  
**TUESDAY AFTERNOON**  
2:15 PM – 4:15 PM

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**THE PUYALLUP WATERSHED: A CASE STUDY IN INTEGRATED FLOODPLAIN MANAGEMENT**

SESSION CHAIR: KATHLEEN BERGER, PIERCE COUNTY

SESSION PANELISTS: JORDAN JOBE, WSU CENTER FOR SUSTAINING AGRICULTURE AND NATURAL RESOURCES

SESSION PANELISTS: ISABEL RAGLAND, PIERCE CONSERVATION DISTRICT

SESSION PANELISTS: HELMUT SCHMIDT, PIERCE COUNTY

SESSION PANELISTS: KRISTIN WILLIAMSON, SOUTH PUGET SOUND SALMON ENHANCEMENT GROUP

\*Panel Discussion\*

In 2013 Pierce County created the Floodplains for the Future initiative for the Puyallup Watershed with the intention to strategically improve floodplain health on a watershed-scale. A diverse stakeholder group of 22 partner organizations in the Puyallup River Watershed embarked on an ambitious effort to take an integrated approach to floodplain management on a watershed scale for enhanced fish habitat, improved floodplain connectivity and increased agricultural viability.

The Floodplains for the Future group brings together stakeholders often at odds in floodplain work to deliver larger, more impactful projects. From 2013 to 2017, the Floodplains for the Future partnership has implemented \$43 million accomplishing:

- 10 floodplain restoration projects completed with 14 more in process
- 480 acres of reconnected floodplain
- 53 structures removed from the floodplain
- 677 agriculture acres conserved
- One levee setback project completed from the 2013 Comprehensive Flood Hazard Management Plan with 5 more underway
- Developing reach scale strategies and suites of actions that are supported by a broad suite of interests and communities

The drive to implement larger and more impactful floodplain projects led to the formation of the Floodplains for the Future partnership and the sustained level of commitment and productivity is a direct result of the trust and partnerships that are implicitly tied to integrated floodplain management.

This presentation will begin with an overview of integrated floodplain management, a description of the Floodplains for the Future program and a summary of the work accomplished in the Puyallup River. Representatives of the lead groups (fish, flood and farm) will share their experiences in integrated floodplain management and the benefits to their specific interests that come through collaboration. The presentation will conclude with a description of the innovative monitoring program created to track goals and progress to support strong work and partnerships into the future.

**PRESENTATION DETAILS**

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BALLROOM D  
**TUESDAY AFTERNOON**  
2:15 PM – 4:15 PM

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**WILL WORK FOR SALMON, OR CAREERS RELATED TO SALMON RECOVERY**

SESSION CHAIRS: SARAH GAGE, GOVERNOR'S SALMON RECOVERY OFFICE

SESSION CHAIRS: ANGELINA QUILICI, UNIVERSITY OF WASHINGTON

SESSION PANELISTS: AMEE BAHR, RECREATION AND CONSERVATION OFFICE

SESSION PANELISTS: LUCAS HALL, LONG LIVE THE KINGS

SESSION PANELISTS: KIRVIE MESEBELUU-YOBECH, KITSAP COUNTY/WEST SOUND WATERSHED COUNCIL

SESSION PANELISTS: RODNEY POND, SOUND SALMON SOLUTIONS

SESSION PANELISTS: RUDY SALAKORY, COWLITZ INDIAN TRIBE

SESSION PANELISTS: BRIANNA WIDNER, WASHINGTON INVASIVE SPECIES COUNCIL

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