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International Conference on Engineering and Ecohydrology for Fish Passage

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INTERNATIONAL CONFERENCE ON ENGINEERING AND ECOHYDROLOGY FOR FISH PASSAGE

JUNE 19-21, 2017 | Oregon State University, Corvallis, Oregon (USA)



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Welcome to Fish Passage 2017










International Conference on Engineering & Ecohydrology for Fish Passage

The 2017 International Conference on Engineering & Ecohydrology for Fish Passage (Fish Passage 2017) promises to be an important international forum on fish passage issues. We have organized this three-day conference with concurrent sessions in engineering, biology and management issues that will be of interest to researchers, educators, practitioners, funders and regulators. We hope the technical sessions help communicate the latest world-wide developments in fish passage technology, its applications and implementation options; whereas the entire event provides you with opportunities to broaden your professional network and is a positive contribution towards solving fish passage challenges.

In addition to a wide variety of technical presentations, the conference also features plenary talks, professional networking opportunities, a poster session and several possibilities to tour fish passage facilities. Field trips are offered on Thursday, June 22nd to fish passage facilities in the Santiam River (tributary to the Willamette River) and to the Columbia River Bonneville Dam. If you did not sign up in advance for these tours, see the registration booth for possible availability.

We hope you enjoy the conference and have a wonderful stay in Corvallis.

Organizing Committee

	<p>Guillermo Giannico, <i>Co-chair</i> Oregon State University. USA.</p> <p><i>Coordination Team Member</i></p>		<p>Margaret Lang, <i>Co-chair</i> Humboldt State University. USA.</p> <p><i>Coordination Team Member</i></p>		<p>Kevin Mulligan, United States Geological Survey. USA.</p> <p><i>Coordination Team Member</i></p>
	<p>Troy Brandt, River Design Group, Inc. USA.</p>		<p>James Capurso, USDA Forest Service. USA.</p>		<p>Andy Peters, Pacific Netting Products. USA.</p>
	<p>Olle Calles, Karlstad University. Sweden.</p>		<p>Matthew Gordos, NSW Dept. of Primary Industries- Fisheries. Australia.</p>		<p>Amy Singler, American Rivers & The Nature Conservancy. USA.</p>

Organizing Committee

Guillermo Giannico*^, Assoc. Professor, Department of Fisheries and Wildlife, Oregon State University. USA.
Margaret Lang*^, Professor, Environmental Resources Engineering, Humboldt State University. USA.
Troy Brandt, Principal Biologist, River Design Group, Inc. USA.
Olle Calles, Associate Professor, River Ecology and Management, Karlstad University. Sweden.
James Capurso, Regional Fisheries Biologist, Pacific Northwest Region, USDA Forest Service. USA.
Matthew Gordos, Fish Passage Manager, NSW Department of Primary Industries – Fisheries. Australia
Kevin Mulligan^, Research Hydraulic Engineer, Conte Anadromous Fish Research Laboratory. USGS. USA.
Andy Peters, Director Markets and Applications, Pacific Netting Products. USA.
Amy Singler, Assoc. Director, River Restoration Program, American Rivers & The Nature Conservancy. USA.

Advisory Board

Kurt A. Gerner*^, Assistant Director of Engineering, Technology and Geospatial, U.S. Forest Service. USA.
Dan Shively*, National Fisheries Program Leader, U.S. Forest Service. USA.
Lee Baumgartner, Fish Ecologist, Institute for Land Water and Society, Charles Sturt University. Australia.
Alison Bowden, Director, Rivers, Coasts and Oceans, The Nature Conservancy. USA.
Jason Dunham, Aquatic Ecologist, US Geological Survey. USA.
Carlos Garcia de Leaniz, Aquatic BioSciences, Swansea University. UK.
Lisiane Hahn, Biologist and Technical director, Neotropical Environmental Consulting Company. Brazil.
Kenneth Ham, Fish Passage, Survival and Behavior Research, Pacific Northwest National Laboratory. USA.
Martyn Lucas, Associate Professor, Durham University. UK.
Erin McCombs, Associate Conservation Director, American Rivers. USA.
Paulo Pompeu, Ecology Professor, Federal University of Lavras. Brazil.
Javier Sanz-Ronda, Hydraulics Professor, Forestry Engineering University of Valladolid. Spain.
Eva B. Thorstad, Research Scientist, Norwegian Institute for Nature Research. Norway.
Christian Tudorache, Senior Scientist and Lecturer, Leiden University. The Netherlands.
Hirokazu Urabe, Senior Researcher, Salmon and Freshwater Fisheries Research Institute. Japan.
Teppo Vehanen, Senior Researcher, National Resources Institute Finland. Finland.

Steering Committee

Margaret Lang*, Professor of Environmental Resources Engineering, Humboldt State University. USA.
Ted Castro-Santos, Research Ecologist, United States Geological Survey. USA.
Chris Katopodis, President, Katopodis Ecohydraulics Ltd. Canada.
Paul Kemp, Professor of Ecological Engineering, University of Southampton. UK.
Kevin Mulligan, Research Hydraulic Engineer, United States Geological Survey. USA.
Herman Wanningen, Director, World Fish Migration Foundation. The Netherlands.
Laura Wildman, Director, Princeton Hydro. USA.

**Chair, ^Coordination Team*

Plenary Speakers

say'ay' – John Eli Sirois

Committee Coordinator, Upper Columbia United Tribes

Monday, June 19th



John is Okanagan and Wenatchi of the Colville Confederated Tribes. **say'ay'** studied History at Dartmouth College, Public Administration from the University of Washington and traditional ways from his elders. Mr. Sirois spent 20 years at the Colville Tribes' in cultural revitalization, renewable energy, policy and governance as former Council Chairman and Member. John facilitates issues through a committee process to achieve the UCUT Mission. Mr. Sirois was the former Chair of the Indian Land Tenure Foundation and worked toward cultural connections, stewardship and use of traditional lands. Mr. Sirois currently focusses his work on reintroduction of salmon and addressing climate change impacts. John approaches his work through the lens of cultural upbringing and applied science. John seeks to build a better future for all for generations to come. You can find say'ay' camping, hunting, hiking and salmon fishing with his family!

Dr. Futoshi Nakamura

Professor, Forest Ecosystem Management Laboratory, Graduate School of Agriculture, Hokkaido University

Monday, June 19th



Dr. Futoshi Nakamura has played an active role not only in the field of application including forestry and ecological engineering, but also in the field of basic science including geomorphology and ecology. From 1990 to 1992, Dr. Nakamura was a visiting scholar and actively involved in LETR project in H. J. Andrew Experimental Forest. His major interest is the interactions in ecosystems such as connections of forests, rivers, and wetlands. He has studied this field from a perspective of watersheds including land use, and his activities extend over a wide range of fields. He serves as a member of editorial boards of international journals including Geomorphology, Earth Surface Processes and Landforms, Landscape and Ecological Engineering, Riparian Ecology and Conservation, and Environmental Science in Oxford Bibliographies. He holds several positions such as president of the Japanese Forest Society; vice president of the

Ecology and Civil Engineering Society; member of the Central Environmental Council; member of the Nature Restoration Promotion Conference; president of the Nature Restoration Committee for Kushiro Wetland, leader of River Construction Advisory Panel of Shireto World Heritage Site.

Dr. Paul T. Jacobson
Senior Technical Leader, Electric Power Research Institute
Tuesday, June 20th



Paul T. Jacobson is a Senior Technical Leader at the Electric Power Research Institute (EPRI). He manages research related to ocean energy and environmental aspects of hydropower.

Dr. Jacobson's research activities at EPRI encompass assessment of technologies and resource potential related to marine and hydrokinetic power generation, and assessment and mitigation of effects of electricity generation on aquatic ecosystems.

His professional work over the past 25 years has focused on environmental assessment in aquatic ecosystems, most often related to electric power generation and especially hydropower. Prior to joining EPRI in 2009, he worked in the environmental consulting arena, most recently for 13 years as the founder and principal scientist of Langhei Ecology, LLC.

For 17 years Dr. Jacobson was a faculty member of the Johns Hopkins University, Krieger School of Arts and Sciences, teaching graduate courses on ecological assessment and landscape ecology. He holds Ph.D. and M.S. degrees in oceanography and limnology from the University of Wisconsin-Madison, and a B.A. degree in biology from Cornell University.

Dr. Tony Farrell
Professor, University of British Columbia
Tuesday, June 20th



Dr. Tony Farrell is a Canada Research Chair (Tier I) and Professor at the University of British Columbia located in Vancouver, Canada. His expertise and research emphasis are in cardiorespiratory physiology. He has published over 400 peer-reviewed papers in this area, with a recent emphasis thermal physiology and the role it will play in the biogeographic distribution of fishes. Farrell's research group has pioneered studies of exercise performance and physiological recovery both in the laboratory and field. He is an elected Fellow of the Royal Society of Canada. He has received an Honorary Doctorate of Science from the University of Göteborg,

Sweden and the highest awards given by the Canadian Society of Zoologists (Fry Medal), the Fisheries Society of the British Isles (Beverton Medal) and the American Fisheries Society (Award of Excellence). He has also received the Murray A. Newman Awards from the Vancouver Aquarium and Marine Science Centre for Aquatic Research & for Conservation, as well as Awards of Excellence from the American Fisheries Society for Fisheries Management & Conservation and for Fish Physiology. He is the series co-editor for the treatise *Fish Physiology* and was editor-in-chief for the award-winning *Encyclopedia of Fish Physiology*. Also, he is currently an Assistant Editor with the *Journal Fish Biology* and a Section Editor with *Aquaculture*.

Dr. Kurt D. Fausch

**Professor, Department of Fish, Wildlife, and Conservation Biology, Colorado State University
Wednesday, June 21st**



Kurt Fausch is a professor in the Department of Fish, Wildlife, and Conservation Biology at Colorado State University, where he has taught for 35 years. His research collaborations in stream fish ecology and conservation have taken him throughout Colorado and the West, and worldwide, including to Hokkaido in northern Japan. His experiences were chronicled in the PBS documentary *RiverWebs*, and the recent book *For the Love of Rivers: A Scientist's Journey*. He has received lifetime achievement awards from the American Fisheries Society

and the World Council of Fisheries Societies, and served as the acting director of the Graduate Degree Program in Ecology at Colorado State University.

List of Exhibitors

(visit www.fishpassageconference.com for more information)

Organization / Company	Contact Person	Contact Information
U.S. Forest Service	Daniel Shively	dshively@fs.fed.us
Upper Columbia United Tribes	Donald Michel	dr@ucut-nsn.org
Pacific Netting Products	Andy Peters	andy@pacificnettingproducts.com
Vaki Aquaculture Systems Ltd (Riverwatcher)	Magnus Asgeirsson	magnus@vaki.is
Oregon Sea Grant	Shelby Walker	shelby.walker@oregonstate.edu
R2 Resource Consultants	MaryLouise Keefe	mkeefe@r2usa.com
HDR Engineering, Inc.	Debra Hempel	debra.hempel@hdrinc.com
The Reinforced Earth Company	Paul Hollis	phollis@reinforcedearth.com
Oregon Department of Fish and Wildlife	Jenni Dykstra	jenni.m.dykstra@state.or.us
EPRI	Paul Jacobson	pjacobson@epri.com
Biomark Inc.	Steve Anglea	steve.anglea@biomark.com
Oregon RFID	Teddi Carbonneau	teddi@oregonrfid.com
Inter-Fluve	Bill Norris	bnorris@interfluve.com
Portland General Electric	John Esler	john.esler@pgn.com
River Design Group	Troy Brandt	tbrandt@riverdesigngroup.net
EKO Group NA	Chad Dornsife	cdornsife@ekogroupna.com
Intake Screens, Inc.	Russell Berry IV	rberry4@intakescreensinc.com
Natural Solutions ... A Dam Site-Better! LLC	Jean Johnson	smolts@msn.com
Real Time Research	Mike Hawbecker	mike@realtimeresearch.com
Northwest Power and Conservation Council	Michael Osborne	mosborne@nwcouncil.org
Farmers Conservation Alliance	Roy Slayton	roy.slayton@fcasolutions.org
Whooshh Innovations	Todd Deligan	todd.deligan@whooshh.com
ALDEN	Stephen Amaral	amaral@aldenlab.com
West Fork Environmental	Erek Arnold	erek@westforkenv.com
Alpha Mach	Robert Turcotte	rtur@alphamach.com
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Salmonsoft	Jeffrey Fryer	jeff.fryer@salmonsoft.com
Advanced Telemetry Systems	Jon Adsem	jadsem@atstrack.com
International Finance Corporation, World Bank Group	Leeanne Alonso	leeannealonso@yahoo.com
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Smith-Root	Jason Kent	jkent@smith-root.com
Kleinschmidt Associates	Jesse Waldrip	Jesse.Waldrip@kleinschmidtgroup.com
Big R Bridge	Doug Myers	dmyers@bigrbridge.com
Whitney Equipment Company Inc	Jason Morse	jmorse@weci.com
Lotek Wireless	Matthew Knoff	matt@biosonicstelemetry.com
CONTECH Engineered Solutions LLC	Matthew Houser	mhouser@conteches.com
Stantec	Michael Chelminski	michael.chelminski@stantec.com

Detailed Program

Abstracts of talks and posters are available at the conference website

Monday - June 19 th (Morning Session)				
Time	Track A	Track B	Track C	Track D
8:00	Registration and Breakfast			
8:30	Introduction and Welcome			
8:50	Plenary Speaker: John Sirois “Monumental Opportunity”			
9:40	Plenary Speaker: Dr. Futoshi Nakamura “Fish passage as a linkage between forest, stream, and marine ecosystem; evidences from nationwide and local studies in Japan”			
10:30	Break			
	Session A1: Large-Scale Migratory Fish Testing Facilities I	Session B1: Fishway Design & Efficiency I	Session C1: Turbine Passage I	Session D1: Screens I
Moderator	C. Philippart	M. Whitman	S. Amaral	R. Stephen
10:50	D. Zielinski; FISHPASS: Developing Selective Bi-directional Fish Passage in the Great Lakes	H. Marques; Evidence of a Fishway Restoring River Connectivity in the Neotropical Region	D. McCoskey; Overview of U.S. Department of Energy Fish Passage Research	C. Shupe; Improving Data Collection Methods for Hydraulic Evaluations of Fish Screens
11:10	T. Castro-Santos; Opportunities and Limitations: Lessons Learned from 20 years of Research at a Large Flume Facility	M. Wilkes; Fishway Design in the Temperate Southern Hemisphere	G. Johnson; Biologically-based Design & Evaluation of Hydro-Turbines (BioDE): A Comprehensive Multi- Year Research Effort	W. Simpson; A Decade of Steelhead Smolt Entrainment: Fish Diversion Patterns of Irrigation Dams in the Umatilla River Basin, Oregon
11:30	N. Johnson; A New Laboratory Flume Facility to Study Migratory Fishes of the Great Lakes Basin	C. Henn; The Piracema Channel of ITAIPU, Paraná, Brazil: Engineering Lessons and Proposed Improvements to the Transposition of Neotropical Fish	A. Colotelo; Laboratory-Based Dose-Response Experiments to Rapid Decompression and Shear	N. Scribner; Fish Screening and Passage at the Harmony Diversion near Manderson, WY: Harmony Can Be Tortuous.
11:50	R. Rodrigues; Using a Temporary In- River Experimental Flume to Study the Influence of Hydraulics on Passage of Amazon Migratory Fishes	F. Groux; Knowledge Update on Shad Upstream Migration: Fishway Design and Efficiency	M. Bevelhimer; Simulating Turbine Blade Strike in the Laboratory to Better Assess Injury and Mortality during Turbine Passage	R. Stephen; Retrofit of a Flat Plate Fish Screen with an Air Burst System for Sediment Transportation
12:15	Lunch			

Monday - June 19th (Afternoon Session)				
Time	Track A	Track B	Track C	Track D
	Session A2: Large-Scale Migratory Fish Testing Facilities II	Session B2: Fishway Design & Efficiency II	Session C2: Turbine Passage II	Session D2: Screens II
Moderator	D. Zielinski	K. Hoverman	M. Lang	P. Christensen
1:30	R. A. Goodwin; Fish Guidance and Passage: Findings from a Method for Confronting Changes in Fish Response to Unchanging Hydraulics	S. Milligan; Fish Passage Concerns with Rebuilt Jetty at Main Fishway Entrance at Little Goose Lock and Dam	M. O'Farrell; Injury to Adult Atlantic Salmon from Contact with Turbine Runners after Swimming Upstream into Draft Tubes.	S. Kingsley; Tokul Creek Fish Passage and Hatchery Intake Improvements
1:50	M. Keefer; The Value of Big Data: Insights from Two Decades of Columbia River Fish Passage Research	K. Muraoka; Cloister to Improve Fish Passage for Bottom-Swimming Fish and Weak Swimmers	B. Pracheil; Sources of Injury and Mortality During Downstream Hydropower Turbine Passage and Spatial Distribution of Mitigations	S. Tétard; The Efficiency of Inclined and Oriented Racks to Prevent Atlantic Salmon Smolts from Entering Turbines
2:10	G. Fiedler; Evaluation of Fishway Design for German Federal Waterways by Means of Fish Studies	S. Müller; Numerical Investigation of the Influence of a Guide Wall in a Fish- Friendly Weir	C. Hoffman; A Comparison of Direct Survival/Injury of Eels Passed Through Francis and Propeller Turbines	L. Perkins; Size Matters: Using Experience, Data, and Modeling to Scale the Farmers Screen For Large Diversion Applications
2:30	J. Wey; Gathering Reliable Fish Data in Large- scale Research Facilities on German Federal Waterways	J. Waldrip; Design and Development of Fish Passage for Shortnose Sturgeon and Other Migratory Fish Species at a Northeast Hydropower Project	D. Deng; Development of Fish- friendly Hydropower Guidelines for Lower Mekong River Fish: Turbine using Sensor Fish	
2:50	Break			

Monday - June 19th (Afternoon Session)				
Time	Track A	Track B	Track C	Track D
	Session A3: Large-scale migratory fish testing facilities III	Session B3: Regional Evaluation of Barriers	Session C3: Swimming Performance	Session D3: Dam Removal
Moderator	D. Zielinski	D. Shively	F. Sanz-Ronda	S. Wright
3:10	S. Amaral; Downstream Fish Passage Studies: Comparison of Lab Results to Pilot & Full-scale Performance	L. Alonso; Fish Passages in International Hydropower Projects: Challenges and Opportunities	F. Sanz-Ronda; Fishway Location, Entrance and Passage for Potamodromous Mediterranean Cyprinids.	H. Wannigen; Dam Removal Europe: a Movement Needed to Support Practitioners and to Refute Myths
3:30	E. Bruins Slot; Actual Fish Migration projects Rhine Delta: Fish Migration River, Haringvliet & Markerwadden	J. Barry; SNIFFER with ICE: a Taster of Barrier Assessment Issues	K. Kappenman; Swimming Performance of Sauger (Sander canadensis) in Relation to Fish Passage	M. Kacmarcik; Hogansburg Dam Removal: Repatriation of Tribal Lands, Fish Passage, and Collaboration
3:50	Catharina J.M. Philippart; Towards a Conceptual Framework to Study Tidal Migration of Diadromous Fish	A. Pervin; Fish Passages From Past to Future in Turkey	E. Ryan; Arctic Grayling and Denil Fishways: A Study to Determine How Water Depth Affects Passage of Arctic Grayling through Denil Fishways	B. Norris; Unknowns Associated with Dam Removal and Managing Risk to Fish Passage
4:10	K. Terwisscha van Scheltinga; Fish Migration River: No Innovative Solution Flourishes without Public Support	C. Garcia de Leaniz; Reconnecting Europe's Rivers: Challenges & Opportunities for the AMBER Project	E. Pereira; Modelling Up-and Downstream Movements of a Catadromous Species through a Vertical-slot Fish Pass	N. Jepsen; Smolt-loss in Reservoirs and the Effects of Removing Dams in Lowland Rivers
4:30	Large-scale Migratory Fish Testing Facilities Open Discussion	R. Weiter; Struggles for Flood Resiliency and Aquatic Organism Passage in Rhode Island, USA.	J. Fuentes-Pérez; Artificial Lateral Lines: Assessing Fish Passages Sensing like a Fish	G. Goll; Hughesville Dam Removal: A Lesson in Sediment Management
4:50		P. Adamsen; Denmark's Largest Fauna Passage and the Integrated Conflicts Between Stakeholders	R. Traczyk; Development of the Perception of Changes in Position, Swimming Speed and Sounds in Fish and its Influence on Passage.	S. Wright; Monumental Legacy: Rogue River Basin Dam Removals
5:30 to 8:30	Technology Social			

Tuesday - June 20th (Morning Session)				
Time	Track A	Track B	Track C	Track D
8:00	Breakfast			
8:30	Introductions and Updates			
8:50	Plenary Speaker: Dr. Paul Jacobson “Tractable and Intractable Problems in Fish Passage: R&D Successes, Areas of Progress, and Hard Spots”			
9:40	Plenary Speaker: Dr. Tony Farrell “Some Physiological Rules and Strategies for Fish Passage”			
10:30	Break			
	Session A4: Downstream Passage I	Session B4: International Case Studies	Session C4: Rock Channels & Nature-Like Fishways I	Session D4: Eel & Lamprey Passage I
Moderator	D. Postlewait	D. Shively	K. Hoverman	A. Haro
10:50	C. Noyes; Lake Cushman Floating Surface Collector Downstream Migrant Smolt Evaluation	B. Verep; The Dam Effects on the Distributions of Fish Assemblages and Water Quality in Yeşilirmak River (Turkey) Using Principle Component Analysis	R. Jesien; Regenerative Stream Channel Serves As A Nature-Like Fish Passageway	P. Jacobson; The Eel Passage Research Center at Age Five – What Have We Learned
11:10	B. Pyper; Effects of Attraction Flow on Downstream Passage of PIT-tagged Juvenile Chinook and Steelhead at Round Butte Dam, Oregon, USA	A. Baniya; The Upper Trisuli Fish Passage : A Fish Ladder in the Upper Part of a Fish Migration Section of a Snow Fed River in Nepal	J. Howard; Observations of Constructed Roughened Channel Hydraulic Characteristics and Comparisons with Self- Formed Channels	Z. Anwar; Optimizing Climbing Substrates for Upstream Passage of Juvenile Eel
11:30	F. Khan; A Study of Fish Injury and Survival at the High Head Bypass at Green Peter Dam, Oregon, USA	A. Babin; Atlantic Salmon Kelt Overwintering Behaviour and Spring Migration Rates in the Mactaquac Reservoir and Saint John River, Canada	M. Conte; Truckee River Fish Passage Improvement Project: Restoring 121 Miles of River for Spawning Migration of Lacustrine Lahontan Cutthroat Trout	J. Wechsler; A Robust, Permanent Upstream Passage System for Juvenile Eels at a Low- Head Dam, Penobscot River, Maine, USA
11:50	J. Hegna; Juvenile Lake Sturgeon Downstream Passage Behavior and Survival at Two Hydroelectric Dams	K. Hughes; Fish Passage Mitigation Toolbox	J. McLean; Nature-Like Fish Passage in the Gulf of Maine: Case Studies of the Design and Implementation for Diadromous Fishes	S. Amaral; Theoretical Assessment of Downstream Passage Survival of Silver American Eel at a Small Hydropower Project
12:15	Lunch			

Tuesday - June 20th (Afternoon Session)				
Time	Track A	Track B	Track C	Track D
	Session A5: Downstream Passage II	Session B5: Ecological Consequences of Barriers	Session C5: Rock Channels & Nature-Like Fishways II	Session D5: Eel & Lamprey Passage II
Moderator	A. Peters	B. Penaluna	L. Wildman	A. Bowden
1:30	G. Taylor; Use of Deep Drawdowns for Downstream Juvenile Chinook Salmon Passage at Fall Creek Reservoir, Willamette Basin, Oregon, USA	C. Caudill; Predicting Travel Time and Pre-spawn Mortality in Spring- Summer Chinook salmon in the Columbia-Snake Hydrosystem and Salmon River Basin	A. Hunt; Manton Mill Pond Dam - Nature-Like Fishway Bypass, Johnston, RI	O. Calles; European Eel Conservation Strategy: From Passage Solutions to Release of Imports and Back Again
1:50	L. Schenk; Monitoring the Collateral Effects of a Deep Reservoir Drawdown for Downstream Fish Passage, Fall Creek Lake, Oregon, U.S.A	Q. Payton; Endangered Salmon and the Birds Who Love (to Eat) Them	D. Nyqvist; Upstream and Downstream Passage of Migrating Adult Atlantic Salmon: Remedial Measures Improve Passage Performance at a Hydropower Dam	D. Aldvén; Evaluation of Intake Rack Solutions for Downstream Fish Passage Using a Large Scale Fish Flume
2:10	C. Murphy; Examining Responses of Reservoir Conditions and Food Webs Following Deep Drawdowns for Downstream Chinook Salmon Passage at Fall Creek Reservoir, Willamette Basin, Oregon, USA	S. Smith; Anadromous Fish Reintroduction in the Upper Columbia River Basin - An Overview	H. Mader; Development and Performance Verification of the Enature® Fishpass	K. McCarthy; Analysis of Silver-Phase European Eel Population Dynamics at an Upper River Erne Catchment Site Used in a Trap and Truck Conservation Measure.
2:30	T. Lyons; Floating Trash Boom Design for the Cowlitz Falls Dam Fish Collector	B. Penaluna; Using eDNA to Understand Changes in Aquatic Biodiversity Above and Below a Barrier	B. Sullivan; Evaluation of Bull Trout Passage Behaviour at a Nature- Like Fishway Built After Partial Dam Removal in Forty Mile Creek, Alberta, Canada	E. Lenihan; Effects of Regulated Flow on Nocturnal Patterns of Silver-Phase European Eel Migration Upstream of an Irish Hydropower Plant.
2:50	Break			

Tuesday - June 20th (Afternoon Session)			
Time	Track A	Track B	Track C
	Session A6: Hydro Power & Conservation: The Icelandic Master Plan	Session B6: Prioritization	Session C6: Eel & Lamprey Passage III
Moderator	M. Lang	D. Ruttenberg	O. Calles
3:10	S. Skúlason; The Icelandic Master Plan for Nature Protection and Energy Utilization: an Integrated Ecosystem Approach	J. Capurso; Salmon Superhighway: Fish, Habitat, and Community Connections at a Landscape Scale	R. Kroes; Fatal Attraction of Freshwater Flows: Migration of Glass Eel (<i>Anguilla anguilla</i> L.) from Sea to Inland Waters
3:30	I. Jónsson; Hydro Power Plants in Iceland and Their Impact on Freshwater Fishes	S. Bailey; Strategic Culvert Replacement for Habitat Enhancement, Community Development and Improving Socio-Ecological Resiliency	R. McLaughlin; Spatial Mismatch Between Sea Lamprey Behaviour and Trap Location Explains Low Success at Trapping for Control
3:50	T. Eiríksson; Integrated Biological, Geological and Cultural Diversity of River Basins with Hydroelectric Potential	R. Weiter; Watershed-Based Planning to Enhance Flood Resiliency and Ecosystem Benefits in New England and New York, USA	N. Corniuk; Passive Sorting of Invasive Sea Lamprey Using Selective Fish Passage
4:10	G. Gíslason; Use of Aquatic Organisms in Ecosystem Evaluation; How They Are Affected by Potential Hydro Power Development	A. Bowden; Measuring Performance of Nature Based Solutions to Demonstrate Multiple Benefits for Fish and People	M. Scurlock; Dynamic Structure Operations for Sea Lamprey Barriers
4:30	T. Thordarson; Potential Hydropower Developments in a Volcanic Environment	A. Singler; Using Prioritization Tools to Advance River Restoration On-the-Ground	N. Johnson; Efficacy of Pulsed Direct Current to Guide Migrating Sea Lamprey
4:50		L. Walter; Enhanced Aquatic Connectivity in the Great Lakes through Regional Collaboration	B. Quintella; Attraction and Passage Efficiency of a Vertical-Slot Fish Pass for Sea Lamprey
5:30 to 7:00		Poster Session, Social	
7:00		Banquet	

Wednesday - June 21st (Morning Session)				
Time	Track A	Track B	Track C	Track D
8:30	Breakfast			
8:45	Introduction			
8:55	Plenary Speaker: Dr. Kurt Fausch “What is Essential about Rivers for Fish and Humans”			
9:45	Project Award Presentation			
10:10	Film Screening: “Water from the Mountain” Freshwaters Illustrated			
10:30	Break			
	Session A7: Downstream Passage III	Session B7: Culvert & Tide Gate Passage	Session C7: Ecology and Planning for Passage	Session D7: Water Quality
Moderator	M. Chelminski	J. Capurso	I. Arismendi	M. Lang
10:50	N. Ackerman; Successful Downstream Passage of Juvenile Salmonids at a Run-of-River Hydro Project in the Pacific Northwest	A. Zucker; Fish Passage Culvert Designs and Retrofits – Case Studies from the Pacific Northwest	W. Stewart; Building Barriers to Protect Southwestern Native Fish	R. Laughery; Design and Evaluation of Lower Granite Dam Fishway Temperature Improvement Project in 2016
11:10	G. Wyatt; Population Level Response to 21st Century Fish Passage Infrastructure in the Upper Clackamas River Basin, Oregon, USA	P. Drobny; Drop Height and Water Velocity as Determinants of Successful Culvert Entry and Passage for Coastal Cutthroat Trout	A. Gilmanov; Computational Agent- Based Model of Fish Swimming Through Mississippi River Locks and Dams Can Be Used as a Tool to Selectively Block Invasive Carp Passage	M. Politano; A Numerical Model to Estimate Fish Exposure to Elevated Temperature in McNary Dam
11:30	J. Renholds; Design of Surface Passage from Lower Granite Juvenile Bypass System Gatewells	P. Smith; Fish Passage at Intertidal Obstructions	I. Arismendi; Linking Hydroclimate and Fish Phenology to Fish Passage Using Ichthyographs	A. Peters; Effects of an Intake Barrier Curtain to Reduce Algae Concentrations: The Iron Gate Dam Experience.
11:50	D. Trachtenbarg; Assessment of Surface Passage from Lower Granite Juvenile Bypass System Gatewells			
12:15	Lunch			

Wednesday - June 21st (Afternoon Session)				
Time	Track A	Track B	Track C	Track D
	Session A8: New Technology	Session B8: Telemetry I	Session C8: Road Crossings and Connectivity	Session D8: Passage Behavior I
Moderator	A. Haro	T. Castro-Santos	J. Capurso	M. Gordos
1:30	A. Haro; Development of a Computer Vision System to Identify Sea Lamprey at Barrier Traps and Fishways	P. Hilgert; Tracking Adult Chinook Salmon Passage in White River, Washington, USA	C. Mount; An Update on the Fish Passage File in British Columbia, Canada	K. Cogliati; The Making of Designer Fish for Passage Studies
1:50	A. Colotelo; Regulatory Considerations for New Fish Passage Technologies	T. Steig; Evaluation of Two Acoustic Telemetry Signal Types on Fish Passage Studies	I. Kroll; Enhancing Aquatic Connectivity by Preventing Unintentional Fish Passage Barriers	G. Johnson; Smolt Responses to Hydrodynamic Conditions in the Forebay Flow Net of the Sluiceway Surface Flow Outlet at the Dalles Dam
2:10	L. Robinson; Review of Fish Passage Technologies at High-Head Dams	R. Cuthbert; Going Beyond Visible Light: Monitoring Adult Fish Passage in Turbid Conditions with Technological Advancements and a Sense of Public Outreach	S. Cierebiej; Washington State Department of Transportation's Fish Passage Program	A. Pinheiro; Passage Behaviour of Potamodromous Cyprinids Negotiating a Small Experimental Weir: Passage by Swimming or Jumping?
2:30	T. Deligan; Whooshh Fish Passage – Results and Extrapolations from 2016 Scientific Studies	K. See; Estimating Salmon Escapement Across the Snake River Basin: a Novel Approach Using PIT tags	A. Chin; Determining Potential Functional Connectivity of Fish Species with Various Life History Traits	F. Romão; Does Season Matter? Addressing Motivation of a Potamodromous Fish Species in an Experimental Full-Scale Vertical Slot Fishway
2:50	Break			

Wednesday - June 21st (Afternoon Session)			
Time	Track A	Track B	Track C
	Session A9: Fishway Hydraulics	Session B9: Telemetry II	Session C9: Passage Behavior II
Moderator	M. Lang	G. Giannico	
3:10	M. Love; The Next Generation of Pool and Chute Fishways	A. Peter; Evaluation of the Effectiveness of Upstream Fish Passage Facilities in the River Rhine Using PIT-Tag Technology	F. Romão; Passage Performance of Two Cyprinids with Different Ecological Traits in a Fishway with Distinct Vertical Slot Configurations
3:30	B. Foster; An Investigation of the Hydraulics in a Prototype Pool-and-Chute, Vortex Weir Fishway for Anadromous Fish Passage.	E. De Oliveira; Predation of Atlantic salmon (<i>Salmo salar</i>) by the European catfish (<i>Silurus glanis</i>) in a Fishway: Analysis by Video and Acoustic Camera and RFID Telemetry.	S. Kucukali; An Investigation of the Hydrodynamic and Fish Behavior Characteristics of the Brush-Type Fish Passage: Iyidere Field Study, Turkey
3:50	K. Plymesser; Effects of Froude Scaling on Turbulence in a Denil Fishway	D. Deng; Acoustic Telemetry Development for Fish Passage	M. Gordos; Fish on the Move: Vertical-Slot Fishway PIT Monitoring Results for Two Australian Native Fish in the Murray-Darling Basin.
4:10	A. Haro; Hydraulic and Biological Analysis of Fish Passability of a Low-Head Stream Gauging Weir	J. Hughes; Evaluation of Juvenile Salmonid Passage and Behavior at Foster Dam Utilizing Radio Telemetry, 2015 and 2016	A. Ballu; Influence of the Presence of Sills on the Behavior of Brown Trout (<i>Salmo trutta</i>) in an Experimental Vertical Slot Fishway.
4:30	A. Pinheiro; Can Vertical Slot Fishways (VSF) Operate with Less Water without Compromising Effectiveness?	K. Nebiolo; Removing False Positive Detections from Telemetry Data: An Algorithmic Approach	G. Burns; Nature-like Fish Passage with Downstream Fish Attraction.
4:50	M. Garello; The Reality of Fish Passage in Concrete Flood Channels		
5:30	Conference Ends		

List of Poster Presentations

ID	Presenting Author Name	Poster Title
1	Dr. Mary Moser	Novel Fishway Entrance Modifications to Improve Passage for Native Fish
2	Mr. Jeff Peters	Comparison of Stream Simulation to Hydraulic Design Approaches for Constructing Fish Passage Channel Segments in Central California Coastal Streams: Challenges, Opportunities, and Lots of Large Rocks
3	Ms. Jessica Pica	USFWS Fish Passage Engineering Design Criteria
4	Dr. Carlos Garcia de Leaniz	Reconnecting Europe's rivers: challenges & opportunities for the AMBER project
5	Ms. Mackenzie Keith	Geomorphic responses to sediment releases during annual reservoir drawdowns at Fall Creek Lake
6	Ms. Julianne Rosset	A New Paradigm – Managing Anadromous Sea Lamprey for Restoration, not Elimination
7	Mr. Bauke de Witte	Fish migration through the Afsluitdijk (dam) between sea and lake
8	Doris Small	Intertidal Water Crossing Structures: Summary of a Literature Review on Fish Access and Habitat Connectivity in Tidal Ecosystems
9	Mr. Damon Romero	Fish Passage Project Monitoring at WSDOT
10	Mr. Jorge Valbuena-Castro	AEPS: a methodology to quickly assess pool and weir fishways
11	Ms. Beth Lambert	A Municipal Assistance Program for Culvert Replacement to Meet Ecological and Safety Goals
12	Mr. Ian Pryor	Round Butte Dam Forebay Flow Evaluation
13	Dr. Bjorn Lake	Fishway Inspection: There's an app for that
14	Ms. Ana García-Vega	Ten years of fishway monitoring
15	Dr. Francisco-Javier Sanz-Ronda	LIFE+ Segura-Riverlink: a green infrastructure approach to restore the longitudinal connectivity in the Segura River (Southeast of Spain)
16	Dr. Kevin Mulligan	A Full-Scale Fishway Entrance Experiment Performed at the USGS Conte Anadromous Fish Research Laboratory
17	Mr. Stefan Stridsman	Efficiency study of fishway with sonar camera in salmon river Piteälven, Sweden
18	Mr. Jonathon Mann	Completion of a Multifaceted Fish Passage Improvement Project on the Russian River, Sonoma County, California
19	Ms. Londi M. Tomaro	Ecological effects of improving or removing tide gates: A knowledge synthesis.

Guided Tours held on Thursday, June 22nd

Bonneville Dam

Bonneville Dam (both Washington and Oregon sides) & the Bonneville Fish Hatchery on the Columbia River, 7:00 AM to 5:00 PM, Fee \$85, Bagged lunch provided.

The Columbia River is the largest river in the Pacific Northwest Region of North America. By volume, the Columbia River is the fourth largest river in the United States and has the most flow of any North American river draining into the Pacific Ocean, providing an opportunity for hydroelectric generation. The 14 hydroelectric dams on the main stem of the Columbia and many more on its tributaries produce more than 44% of the hydroelectric generation of the U.S.

This tour is an outstanding opportunity to learn how the U.S. Army Corps of Engineers and their partners provide upstream and downstream passage for migratory fish. We will tour three sections of the dam; the Washington shore fish ladder, adult fish facility, and smolt monitoring facility



Santiam River

Upstream, Downstream and Lateral Passage Projects in the Santiam River Drainage System, Willamette River Basin, Oregon, 8:00 AM to 4:00 PM , Fee \$85, Bagged lunch provided.

The Santiam River is a primary cold water tributary to the Willamette River, joining the Willamette southeast of the City of Salem, Oregon. The river system supports anadromous and resident populations of salmon, steelhead, Pacific lamprey, and other native fish species. The lower river has the Bennett Dam complex (which includes the Upper and Lower Bennett dams) near Stayton, Oregon. These are low head surface water diversions that divert water for the City of Salem.

Upstream the river is impounded by Detroit Dam and Big Cliff Dam (re-regulating dam), which are high head flood control dams managed by the U.S. Army Corps of Engineers (USACE).

The Santiam Tour will include both North and South Santiam River sites.



Availability is expected to be limited for each tour, please see the registration booth located in the LaSells Stewart Conference Center to register. For more information on the tours, go to www.fishpassageconference.com

Distinguished Project Award Winner

Soda Springs Dam Fish Passage

The 60-ft high Soda Springs dam was built within a steep, narrow canyon in 1952, without fish passage, hence blocking anadromous fish access to about 7 miles of high-quality river and creek habitat. The Soda Springs fish passage project retrofitted the dam with a volitional passage fish ladder and counting station, a submerged-V automatically-cleaned fish screen, and spillway modifications. Associated powerhouses were fitted with tailrace barriers to protect migrating adult fish. Habitat in the newly-accessible reaches has been improved via higher flows, gravel augmentation, and structural features. The project has so far encompassed 16 years of design, construction, modification, performance evaluation, and monitoring. Although PacifiCorp funds the effort, the resource agencies have been directly involved in all aspects. The project meets agency hydraulic and biological criteria, per design, to the greatest extent possible within the challenging geography, geology, and hydrology, and is successfully passing wild fish. Monitoring will continue for 20 more years. A special consideration is that the fish screen collapsed catastrophically during a high-flow debris event only 2 days after construction and testing was complete - this forced a year-long re-design and modification to customize the facility to actual river conditions.



Presented to:

- Rich Grost, Scott Schevenius, Eric Hansen, Tim Hemstreet, Mark Sturtevant, Steve Albertelli, Monte Garrett, and the North Umpqua Hydropower Project Crew (PacifiCorp)
- Clint Smith (MWH Americas)
- Dirk Pedersen (Stillwater Sciences)
- George Gilmour (Meridian Environmental)
- Resource Coordination Committee (BLM, ODEQ, ODFW, OWRD, NMFS, USFS, USFWS)

Awards Proudly Sponsored by:



Career Achievement Award Winner

Stephen Gephard (Connecticut Department of Energy & Environmental Protection, Fisheries Division)



Stephen (Steve) has worked for over 30 years in this area within the region, and continues to work fervently for the benefit of the species he manages. Steve has been a long-standing and active member of the American Fisheries Society and its Bioengineering section, the Northeast Division, and the Southern New England Chapter since 1976. His main professional role is to manage the enhancement and restoration of diadromous fishes across the state of Connecticut; from New York

to Rhode Island and Long Island Sound to Massachusetts. Steve has also been vital in the design, funding, and construction of over 65 fishways and 22 dam removals, providing extensive access to upstream habitat for literally hundreds of thousands (if not millions) of diadromous fishes. He has assisted fish passage efforts in Illinois, New York City, and Maine and was involved in projects in Spain and serves on a scientific advisory committee for diadromous fish in the Loire River (France), written up in Knowledge and Management of Aquatic Ecosystems. Under George W. Bush and Barack Obama he has received Presidential appointments to the post of Commissioner to the North Atlantic Salmon Conservation Organization, a regional fisheries management organization for Atlantic Salmon.

Conference Acknowledgements

First, we would like to thank all the Organizing Committee (OC), the Advisory Board (AB), and the Steering Committee (SC) members for their hard work. However, we need to recognize a few people for going above and beyond. First is Kevin Mulligan, member of the OC and recent PhD graduate from UMass Amherst, who operated the website and worked tirelessly behind the scenes making changes as requested and providing outstanding logistical support. Andy Peters was instrumental in attracting many of the sponsors and exhibitors that made this conference possible. Troy Brandt and James Capurso made both conference tours possible. Dan Shively and Kurt Gerner, co-chairs of the AB, are next in our list. We cannot thank them enough for coordinating the work of an outstanding board of advisors who help recruit speakers, identify session themes, review abstracts, etc. Thank you all who volunteered time to work on the OC or AB and to moderate sessions or act as student volunteers. This conference would not have been possible without your assistance.

We have to acknowledge Jen Stotts, Carly Weber and Debra Weitzman at OSU's Conference Services for everything they did to make the conference a success. It would have been impossible to have this conference at OSU without your help. We also want to thank Bas Deelman, World Fish Migration Foundation, for designing the cover page of this booklet and the banner for the conference's website.

Finally, we want to acknowledge the organizers of all previous Fish Passage Conferences because they have contributed to build a base of researchers and practitioners who look forward to participating in these annual events. In particular, we recognize the work of Brett Towler and David Ahlfeld, who launched this conference series at UMass Amherst in 2011.

To all the participants who are traveling to Corvallis from elsewhere in the USA and from all around the world, we want to wish you a very pleasant stay and an enjoyable experience in our college town.

Please join us for the next meeting in Australia. December 10 - 14, 2018 at Charles Sturt University, Albury, New South Wales. We hope to see you there!!

Guillermo Giannico
Co-Chair, Organizing Committee

Margaret Lang
Co-Chair, Organizing Committee

Collaborators



ALBURY NEW SOUTH WALES, AUSTRALIA



FISH PASSAGE 2018

INTERNATIONAL CONFERENCE ON FISH PASSAGE;
SHOWCASING BEST PRACTICE AND INNOVATIONS
ALBURY, NEW SOUTH WALES, AUSTRALIA
MONDAY 10TH - FRIDAY 14TH DECEMBER 2018

