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UNIT NEWS

AFS Bioengineering Section Hosts Nature-Like Fishway Workshops

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This spring, two nature-like fishway (NLF) workshops were held under the direction of the AFS Bioengineering Section, funded by Resources Legacy Fund. A two-day workshop was held on March 26–27 as part of the Salmonid Restoration Federation Conference in Santa Rosa, California and was attended by more than 80 people. A one-day workshop was held on May 4 as part of the Joint International Ecohydraulics and Fish Passage Conference in Quebec City, Quebec, Canada and attended by approximately 40 people. The goal of the workshops was to share knowledge of nature-like fishway design and long-term stability observations among practitioners, regulators, and operators to improve the collective awareness of contemporary NLF science and design methodologies to ultimately provide more effective and sustainable passage for fish.

The workshops featured instruction from experts, including Tyler Kreider (organizer, Kleinschmidt), Mike Love (Michael Love and Associates), Jesus Morales (U.S. Fish and Wildlife Service), Bjorn Lake and Brian Cluer (National Marine Fisheries Service), Mike Garello (HDR), Barry Chilibeck (Northwest Hydraulic Consultants), and Marcin Whitman (California Department of Fish and Wildlife, retired).

The following is a summary of the key topics and material covered in these workshops.

The History of NLF Design and Available Resources

The opening session introduced the concept of NLFs for restoring aquatic organism passage. It provided an overview of NLF historical development, refined design methods, and established guidelines, such as the 2016 Interagency NLF Guidelines and 2023 National Marine Fisheries Service Pre-Design Guidelines. Participants learned about different NLF concepts and their applications.

Site Selection and NLF Hybridization

This session explored site characteristics conducive to NLF installation. It covered decision making for different NLF styles (step pool, roughened channel, hybrid) and when to choose a bypass versus an inline full- or partial-width NLF. Participants gained an understanding of how to select a site and design style, and the importance of team composition in designing a NLF.

A nature-like fishway workshop at the Joint International Ecohydraulics and Fish Passage Conference 2024. Left to right: Jesus Morales, Tyler Kreider, Bjorn Lake, Mike Love, Mike Garello, and Barry Chilibeck. Photo credit: Jessica Pica.

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A nature-like fishway workshop at Joint International Ecohydraulics and Fish Passage Conference 2024. Photo credit: Jessica Pica.

Pre-Design Objective-Setting, Risk Assessment, and Geomorphology

Focusing on predesign aspects, this session included site characterization, stream profile evaluation, and channel stability assessment. It addressed fishway entrance and exit layout, potential risk factors, and mitigation strategies. Findings from this phase were used to establish specific design objectives for the NLF project.

Site Visit

Attendees were invited to an informal NLF site visit at Yellowjacket Creek near the conference.

Design, Monitoring, and Maintenance

This session covered factors in the NLF design process, such as riprap sizing, infrastructure accommodation, and hydraulic modeling. It discussed regulatory and public safety considerations, long-term maintenance, and fish passage effectiveness monitoring methods and results. The session concluded with a question and answer session on the discussed topics and attendee experiences.

Contracting and Implementation

This session reviewed project implementation and construction process challenges, focusing on risk management. Topics included project delivery methods, contractor selection, material procurement, quality control, construction methods, stream diversions, instream work permitting, and surveying methods. Emphasis was placed on meeting design intent, managing risks, and achieving long-term performance objectives.

These comprehensive sessions provided participants with valuable insights and practical knowledge, enhancing their capability to design and implement effective and sustainable nature-like fishways. Presentations and reference documents are available online (https://bit.ly/3RS8cmL). AFS