



Western Fisheries Research Center (WFRC)

Western Fisheries Science News



Adult sockeye salmon on spawning grounds in the Cle Elum River, Washington. Photo by Ryan Tomka, USGS.

Evaluating Innovative Fish Passage Alternatives to Support Upstream Sockeye Salmon Passage

Sockeye salmon have been absent from the Yakima Basin in Washington for nearly a century, but new and innovative efforts are underway to provide upstream access to areas they can no longer access on their own. Sockeye salmon were historically present in the basin, but the population was eliminated in the early 1900s when several impassable dams were constructed. These dams blocked access to four lakes in the Yakima Basin, which provided important spawning and rearing habitat for anadromous fish. In 2002, as part of a settlement agreement with the Yakama Nation, the Bureau of Reclamation (Reclamation) agreed to evaluate the feasibility of constructing fish-passage structures at the four reservoir dams in the Yakima Basin, eventually determining that this was feasible.

In 2012, the Yakima Basin Integrated Plan (Integrated Plan) was completed by the Yakima River Basin Water Enhancement Project Workgroup (composed of representatives of the Yakama Nation; Federal, State, county, and city governments; environmental organizations; and irrigation districts). The Integrated Plan identifies a comprehensive approach to water resource and ecosystem restoration improvements in the Yakima Basin to be implemented over 30 years. Action toward the first element of the plan, reservoir fish passage, is underway, as partners begin to explore salmon reintroductions and evaluate passage alternatives to help support salmon passage and ultimately restore species in the Yakima River. (Continued next page)

Events

WFRC Scientists at Western Fish Disease Workshop:

On June 20-22, 2018, four scientists from the WFRC- Maureen Purcell, Bill Batts, Doug McKenney and Diane Elliott -attended and presented at the Western Fish Disease Workshop held in Bozeman, MT. The workshop provided a forum for dissemination of current information on important topics concerning health and disease of wild and cultured fishes, and featured technical presentations, a round table discussion, and a continuing education session. In the technical session, Bill Batts, Maureen Purcell and Doug McKenney gave presentations on genetic surveillance, virus persistence, and genetic subgroup virulence of infectious hematopoietic necrosis virus (IHNV) of salmonids. In the continuing education session for fish health professionals, emeritus scientist Diane Elliott gave a presentation on diagnostic tools for *Renibacterium salmoninarum*, the causative agent of salmonid bacterial kidney disease. For more information, contact Diane Elliott, dgelliott@usgs.gov, Seattle, WA

WFRC Scientist Participates in Outreach at 4-H Camp:

On June 15, 2018, WFRC scientist Jamie Sprando was an invited participant in an outreach event for a 4-H camp in Heppner, OR. There were 80 campers between the ages of 10-12 years. Sprando discussed fisheries tagging and tracking techniques, provided a tagging demonstration, assisted the campers with learning to suture, and shared outreach materials. For more information, contact Jamie Sprando, jsprando@usgs.gov, Cook, WA. (Continued next page)

Reclamation and the Washington State Department of Ecology have been looking at new and innovative means to provide passage that could help reduce project cost and construction timing while maintaining survival rates of traditional upstream passage facilities. One innovative fish-passage system is being evaluated for feasibility at Cle Elum Dam; the [Whooshh Fish Transport System](#) (WFTS). The WFTS passes fish through a soft, flexible tube and supporting structure using differential air pressure created by the system. This system has been effective in moving fish—species such as American shad, pink salmon, Chinook salmon, lake sturgeon, sockeye salmon, and Atlantic salmon—as far as 335 meters (1,100 ft) and has the potential to be used for providing fish passage at high-head dams. The system that was installed at Cle Elum Dam in 2017 is longer than any other current system at 518 m (1,700 ft) in length and 55 m (180 ft) in height.

In 2017, WFRC was contracted by Reclamation to evaluate the outcome of passing adult sockeye salmon through a WFTS at Cle Elum Dam. Study fish were tagged with acoustic transmitters, then either passed through the WFTS or transported around the dam in a fish-hauling truck. Fish were then tracked and monitored to evaluate behavior and survival. The study provided passage survival estimates for both groups of fish. Tagged fish passed through the WFTS on the first day of release experienced low survival. However, survival increased throughout the tagging and release period, with the highest WFTS passage survival estimate observed on the final day of release. Several factors were found to influence passage survival. A manufacturing defect was discovered partway through the release period which prevented the inside of the WFTS tube from receiving water injections that function to lubricate the tube for fish passage. Also, the study was conducted using a single WFTS tube. Some of the sockeye salmon were smaller than the optimum size for passage through that tube and results showed that these smaller fish had lower survival than larger fish which were appropriately-sized for passing through the WFTS tube used in the study. The study also provided important findings on fish movement patterns in Cle Elum Reservoir, where the Yakama Nation has been reintroducing sockeye salmon since 2009. Sockeye salmon that were outplanted into the reservoir displayed a short-term (<20 d post-release) pattern of exploratory movements which included (1) moving upstream of the reservoir and into the Cle Elum River, and (2) passing downstream of Cle Elum Dam. Tagged fish moved little during the month of August, but then moved upstream during September and October for spawning. These results provide new insights into behavior and survival patterns of sockeye salmon released into Cle Elum Reservoir as part of ongoing efforts to re-establish a self-sustaining population upstream of Cle Elum Dam. Results from this study have been recently published in a [U.S. Geological Survey Open-File Report](#) “Evaluation of sockeye salmon after passage through an innovative upstream fish-passage system at Cle Elum Dam, Washington, 2017.

To learn more, contact Toby Kock tkock@usgs.gov at 509-538-2915.

Events (Continued)

USGS at Columbia River Basin Dreissenid Monitoring Forum:

On June 5-6, 2018, USGS WFRC scientist Tim Counihan co-facilitated the Columbia River Basin Dreissenid Monitoring Forum in Portland, OR as part of the DOI Initiative: Safeguarding the West. The meeting, hosted by the Pacific States Marine Fisheries Commission and USGS, convened aquatic invasive coordinators and scientific experts from the Pacific Northwest of Canada and the US. Participants assessed the status of dreissenid monitoring efforts in the Columbia River Basin, identified key strengths and weaknesses of existing collaborative efforts to monitor for dreissenids, and identified priority monitoring gaps foundational to dreissenid prevention efforts. Participants then proposed specific actions to facilitate a multi-jurisdictional dreissenid monitoring framework for the Columbia River Basin. For more information, contact Tim Counihan, tcounihan@usgs.gov, Cook, WA.

USGS at White Salmon River Fest:

On June 1-3, 2018, USGS WFRC scientists participated in the 12th Annual White Salmon River Fest near Husum, WA. The White Salmon River Fest and Symposium focuses on the White Salmon River and the environment, community, and history that surrounds it. The river is considered an invaluable social, recreational, and economic benefit to those who call it home. Since the removal of Condit Dam in 2012, the event’s symposium portion has become the premier resource for the most up-to-date information on the decommission process. During the symposium, a video by the Forest Service was shown, focused on boater/angler education. The video included an interview with USGS scientist Ian Jezorek about fish recolonization, spawning, and ways to minimize impact on fish while on the river. To watch the video, visit the link at: <https://www.youtube.com/watch?v=XIVZDRndwHM>. For more information, contact Ian Jezorek, ijezorek@usgs.gov, Cook, WA.

USGS Western Fisheries Research Center

6505 N.E. 65th Street

Seattle, Washington 98115

<http://wfrf.usgs.gov/> 206-526-6282