



Western Fisheries Research Center (WFRC)

## Western Fisheries Science News



Juvenile Snake River basin fall Chinook (inset) are being studied in Hells Canyon on the Snake River. Photo courtesy Ken Tiffan, USGS.

### Partnership Paves the Way for Understanding Biology of Threatened Snake River Basin Fall Chinook

New gains are being made for threatened Snake River basin fall Chinook salmon thanks to the foresight and collaboration of a few researchers more than twenty five years ago.

Historically abundant in the Snake River basin and highly valued by Native American tribes, fall Chinook faced many threats as humans began to alter the landscape. By 1992, they warranted listing on the Endangered Species Act.

At the time of listing, little was known about the biology and life history of these fish that swam more than 1,000 miles to spawn. Information was needed to guide the work to protect this fish. Fortunately for future generations of fish and people, a group of researchers had the foresight to realize the impending crisis and enlisted the support of Bonneville Power Administration (BPA) to fund studies for Snake River fall Chinook salmon beginning in 1991.

This formed a cooperative effort between the U.S. Fish and Wildlife Service (FWS) and the U.S. Geological Survey's Western Fisheries Research Center (WFRC; then a part of the FWS but later to become part of USGS) that continues to this day.

Over the years, the FWS and WFRC conducted joint research (along with tribes, state and federal agencies, and private power companies) to address evolving management (Continued on page 2)

### Events

**USGS Scientist to Present at International Ecohydraulic Symposium:** On February 7-12, 2016, Research fisheries biologist Russell Perry will present at the International Ecohydraulic Symposium in Melbourne, Australia. Perry, an invited speaker will be presenting two talks titled "Modeling infection and mortality of juvenile Chinook salmon due to disease caused by ceratonova shasta in the Klamath" and "Modeling fish movement in a spatially explicit population model of juvenile Chinook salmon in the Klamath River, USA." The presentations will highlight Perry's work with colleagues from USGS, U.S. Fish and Wildlife Service, and Texas State University. The International Symposium of Ecohydraulics is the premier international meeting for scientists and innovative practitioners working across disciplines (aquatic ecology, water engineering, fluvial geomorphology and biogeochemistry) focusing on the underpinning science and its application. For more information, contact Russell Perry, [rperry@usgs.gov](mailto:rperry@usgs.gov) or 509-538-2299.

### USGS Scientist Provides Educational Outreach About Fish in the Columbia River:

On January 21, 2016, Research scientist Noah Adams visited Stevenson High School (Stevenson, WA) to give a presentation to a Gorge Science class. Adams presented some examples of the science USGS conducts in the gorge, answered student questions, and discussed career opportunities with USGS. For more information, contact Noah Adams, [nadams@usgs.gov](mailto:nadams@usgs.gov) or 509-538-2299 x254.

### In the News

On January 29, 2015, scientists Dave Hewitt and Eric Janney were featured in an article by the [Herald and News](#) (Continued on page 2)

questions on basic life history requirements, hatchery supplementation, migration behavior, summer flow augmentation, life history diversity, and predation. A cornerstone of this cooperative effort has been the production of high-quality research and information that would be useful to fishery managers and the scientific community.

For twenty-five years, the FWS and WFRC have produced over 45 peer-reviewed journal articles that represent a large portion of our current understanding of fall Chinook salmon in the Snake and Columbia River basins. Information has also been disseminated in numerous reports, technical meetings, and at professional meetings.

Today, recovery efforts for Snake River fall Chinook salmon, which has been supported by sound research, have helped restore the abundance of this species. In 1991, only 46 spawning nests were counted in the Snake River, but in 2013 over 3,200 nests were counted. This has resulted in the production of millions of juvenile fish that now swim to the ocean each year to hopefully continue the journey to recovery. In fact, both tribal and sport harvest of returning adults is allowed in the Snake River—something that has not been seen in decades!

Not all questions are answered. The FWS and WFRC are currently developing a life-cycle model that will help us better understand how different recovery scenarios will affect the entire fall Chinook salmon population, their long-term persistence, and the eventuality of their delisting as a “threatened” species.

As part of this long-term cooperative project with the FWS, Ken Tiffan of the WFRC’s Columbia River Research Laboratory has had the privilege of leading the WFRC research activities in the Snake River since 1992. Field activities have increased to the point that a field office has been established in Clarkston, Washington that currently supports six year-round employees, a small fleet of boats, and a small laboratory. Apart from fall Chinook salmon, Tiffan also worked for a number of years investigating chum salmon spawning behavior and habitat downstream of Bonneville Dam, and on a large-scale habitat restoration project at Crims Island in the Columbia River estuary.

For more information, contact Ken Tiffan, [ktiffan@usgs.gov](mailto:ktiffan@usgs.gov), at 509-538-2299, ext. 279.

## In the News (Continued)

(Klamath Falls, OR). The article describes a USGS study focused on bird predation on endangered Lost River and shortnose suckers. For more information, contact David Hewitt, [dhewitt@usgs.gov](mailto:dhewitt@usgs.gov) or 541-273-8689 x215; or Eric Janney, [ecjanney@usgs.gov](mailto:ecjanney@usgs.gov) or 541-273-8689 x202.

**Return of Salmon Nutrients and River Ecosystem Recovery after Dam Removal on the Elwha River:** During the week of December 29, 2015, USGS research ecologist Jeff Duda was mentioned in various news media outlets about a songbird study showing the return of salmon nutrients and river ecosystem (Continued next column)

## In the News (Continued)

recovery after dam removal on the Elwha River in Washington State. [The Columbia Basin Bulletin](#); [PHYS.ORG](http://PHYS.ORG); and [newswise](http://newswise). For more information, contact Jeff Duda, [jduda@usgs.gov](mailto:jduda@usgs.gov) or 206-526-2532.

**Not Just Invasive Mussels a Concern: Asian Copepods Changing Columbia Basin Food Web for Salmon:** On December 29, 2015, USGS research fishery biologist Tim Counihan was featured in the [Columbia Basin Bulletin](#) for his research on Asian copepods in the Columbia River. The article describes Counihan’s collaborative projects with Washington State University aimed at detecting and preventing the spread of quagga and zebra mussels in the Northwest and investigating the effects of invasive zooplankton on the dynamics of the zooplankton community in the Columbia River. For more information, contact Tim Counihan, [tcounihan@usgs.gov](mailto:tcounihan@usgs.gov) or 509-538-2299 x281.

## Publications

- Hardiman, J., G. Holmberg, and N. Elder.** 2015. Boat ramp locations within the Columbia River Basin with associated recreational use, water quality measurements, and risk assessment data for zebra and quagga mussels - service definition file: [U.S. Geological Survey ScienceBase](#). DOI: 10.5066/F71N7Z6D.
- Beeman, J.W., S.D. Evans, P.V. Haner, H.C. Hansel, A.C. Hansen, G.S. Hansen, T.W. Hatton, J.M. Sprando, C.D. Smith, and N.S. Adams.** 2016. Evaluation of the hydraulic and biological performance of the portable floating fish collector at Cougar Reservoir and Dam, Oregon, 2014. [U.S. Geological Survey Open-File Report 2016-1003](#). DOI 10.3133/ofr20161003.
- Hereford, D.M., S.M. Burdick, D.G. Elliott, A. Dolan-Caret, C.M. Conway, and A.C. Harris.** 2016. Survival, movement, and health of hatchery-raised juvenile Lost River suckers within a mesocosm in Upper Klamath Lake, Oregon: [U.S. Geological Survey Open-File Report 2016-1012](#), 48 p. DOI: 10.3133/ofr20161012.

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