



Western Fisheries Research Center (WFRC)

## Western Fisheries Science News



Antennas deployed in the Wind River to monitor movements of fish that have been tagged with Passive Integrated Transponder (PIT) tags. The need to track fish movements in large streams over extensive areas has pushed this current technology to the limits. Photo credit: Ian Jezorek, USGS

### Using Challenges and Prizes to Find Innovative Solutions

How can we find innovative ways to solve long-standing problems facing water and water-related resources in our nation? One creative answer: prize challenges. The concept of prize challenges has been around for years. In 1714, the British government offered a prize of £20,000 to the person who found a way to accurately determine a ship's longitude. The winner, a Yorkshire carpenter and clockmaker John Harrison, invented a clock that worked at sea—a solution that revolutionized the maritime world. Countless other inventions can be credited to prize challenges, including canned goods, the first flight by Charles Lindbergh across the Atlantic Ocean, margarine, and fire extinguishers. Prize competitions are also being used to solve some of the problems government faces. National Aeronautics and Space Administration (NASA), Department of Energy, and Department of Defense have a long track record of using prize competitions under other pre-existing authorities. Based on their successes with prize competitions, Congress gave all agencies broad authority to use prize competitions to advance their core missions via the America COMPETES Reauthorization Act of 2010. Many federal agencies are currently using prize challenges to meet their information and technology needs (see <https://www.challenge.gov/list/>).

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### Events

#### Western Fisheries Research Center

#### Participates in Ecological Flows Workshop:

On September 22, 2015, WFRC scientist Tim Counihan participated in an Ecological Flows workshop in Fort Collins, CO. As part of the workshop, participants discussed what management questions and research topics a USGS ecological flows initiative should address. One topic in the workshop provided USGS's success and expertise in ecological flows research and development, including some examples of the successful application of USGS decision support tools and USGS research in support of decision making. For more information, contact Tim Counihan, [tcounihan@usgs.gov](mailto:tcounihan@usgs.gov) or 509-538-2299 x281.

#### USGS at Pacific Northwest Fish Health

**Protection Committee:** WFRC scientist Gael Kurath recently presented an update on IHN virus research applications for fish health management at the semi-annual meeting of the [Pacific Northwest Fish Health Protection Committee](#) (PNFHPC) in Glededen Beach OR, September 15-16, 2015. The PNFHPC is an organization of technical and policy representatives from conservation agencies, Tribes, and commercial fish producers from the Pacific Northwest. The Committee originated as a forum, which operates on a consensus basis, to discuss and resolve fish issues, to disseminate research findings/educational material, and to communicate openly on all matters as the relate to production of health fish in the cultured and natural settings. For more information, contact Gael Kurath, [gkurath@usgs.gov](mailto:gkurath@usgs.gov), or 206-526-6583.

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The U.S. Geological Survey (USGS), Western Fisheries Research Center (WFRC) is now playing a role in shaping prize challenges, initiated by funding gained by the Bureau of Reclamation to design prize competitions for a number of outstanding questions that impact fisheries resources. WFRC research scientist Patrick Connolly has been working on a Fish Recovery Prize Competition Challenge to generate solutions for improved fish tracking systems <http://www.usbr.gov/research/challenges/>. A nationwide competition has been launched, solutions have been submitted, and now the judging is in process. Connolly is working with other teams to design several more challenges focused on fish passage, food web assessments, and assorted fish metric technologies. This involves collaboration with experts from other federal agencies such as NOAA-National Marine Fisheries Service, U.S. Fish and Wildlife Service, and U.S. Army Corps of Engineers, as well as with fellow USGS scientists from WFRC and other USGS Science Centers.

The first challenge that Connolly worked on was focused on finding innovative fish tracking technologies that would reduce costs and improve fish tracking methods. With many fish species swimming through our rivers and waterways, effective tracking methods are vital to monitoring ecosystem health and recovering threatened and endangered fish species. Current fish tracking methods rely on capturing and handling fish to implant or attach tags. The process of attaching tags is costly and complex and can also stress fish. While research communities have explored advancements to these technologies, Reclamation's prize challenge competition "New Concepts for Remote Fish Detection" encouraged breakthrough ideas by inviting innovative solutions from a national community. Addressing the need for improved technology will have practical applications for federal, state, tribal, and private industries. The fish tracking challenge closed in August, and winners will be announced in late October. There are more challenges being developed such as "Quantifying Drift Invertebrates in River and Estuary Systems" and "Downstream Fish Passage at Large Dams." Connolly is looking forward to seeing the results of these competitions: "By reaching out to non-traditional sources for solutions to difficult problems, we hope that truly innovative ideas come forth that government scientists can use and help develop in collaboration with the solvers."

Connolly was first approached by the Bureau of Reclamation for his expertise and innovative approach using Passive Integrated Technology (PIT) tags to answer questions related to fish movement and behavior. Connolly has successfully extended the technology beyond its common use and applied it in streams throughout the western U.S., such as the Wind River (WA), Methow River (WA), Jarbidge River (NV), and Little Colorado River (CO). Being based out of WFRC's Columbia River Research Laboratory affords Connolly contact to colleagues specializing in fish behavior, fish life history, and fish tracking technology.

To learn more about prize challenges, visit <http://www.usbr.gov/research/challenges/> or contact Patrick Connolly, [pconnolly@usgs.gov](mailto:pconnolly@usgs.gov) or 509-538-2299, ext. 269.

## Events (Continued)

### USGS at International Fish Health

**Conference:** WFRC scientist Diane Elliott participated in the [17th International Conference of Diseases of Fish and Shellfish](#) in Las Palmas de Gran Canaria, Spain, on September 7-11. This was the largest conference of its kind held in 2015, with more than 500 fish health scientists from many countries of the world participating. Elliott gave an oral presentation on differential susceptibility of two Chinook salmon stocks to *Ichthyophonus*, an important, widely distributed protistan parasite. She also was a co-organizer of the post-conference Histopathology Workshop that was held on September 13 and focused on the effects of infectious and non-infectious diseases on fish gill tissues. For more information, contact Diane Elliott, [delliott@usgs.gov](mailto:delliott@usgs.gov), or 206-526-6591.

**WFRC Director Attended Association of Fish and Wildlife Agencies Meeting:** WFRC Director Jill Rolland participated in the annual meeting of the [Association of Fish and Wildlife Agencies](#) (AFWA) in Tuscon, AZ on September 13-16. This annual event provides a forum for conservation leadership and brings together more than 700 leaders from fish and wildlife agencies and conservation groups from all 50 states, U.S. Territories, Canada and Mexico in order to discuss conservation policy and management issues and accomplishments. Rolland reported out on fish health activity at the Center to the Fish and Wildlife Health Committee. For more information, contact Jill Rolland, [jrolland@usgs.gov](mailto:jrolland@usgs.gov), or 206-526-6291.

### USGS Scientist Featured in Fish Farming

**News:** WFRC scientist Diane Elliott was recently featured on the front page of [Fish Farming News](#), aquaculture's national newspaper. The article highlighted Elliott's recent Snieszko award, the highest award given in the American Fisheries Society's Fish Health Section, and her many contributions to the field. Elliott is internationally known among fish health researchers for her important work in the areas of bacteriology and histopathology of finfish. For more information, contact Diane Elliott, [delliott@usgs.gov](mailto:delliott@usgs.gov), or 206-526-6591.

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