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Western Fisheries Research Center (WFRC)

Western Fisheries Science News

A recently arrived steelhead trout virus is killing thousands of juveniles like the one pictured in the waters of coastal Washington. Photos by Rachel Breyta.

Deadly Steelhead Virus Arrives in Coastal WA

Running from the glaciers of the Olympic Mountains through the temperate rainforests of Olympic National Park to the Pacific Ocean, the Quinault and Queets Rivers are two of the most pristine rivers left in the lower 48 states. Their many runs of salmon and trout are important to the region's ecology, economy and culture, particularly for the native people of Washington's Olympic Peninsula. Unfortunately, recent disease outbreaks among steelhead trout demonstrate that even this seemingly isolated ecosystem is but one part of a larger whole and subject to disease pressures from distant watersheds.

In May of 1997, managers at the Salmon River Tribal Fish Hatchery in the Queets River watershed were alarmed to discover that their juvenile steelhead trout were sick and dying in unusually large numbers. They sent tissue samples to the Northwest Indian Fisheries Commission for diagnostic testing, and then on to Rachel Breyta, Amelia Jones and Gael Kurath, scientists with WFRC in Seattle, WA, for further analysis. Genetic tests identified the responsible agent as an M genogroup strain of Infectious Hematopoietic Necrosis Virus (IHNV), a steelhead-specific form of a virus long present in the Columbia River Basin but never before seen in coastal WA. There is no known treatment for IHNV. Managers destroyed the entire cohort of infected trout to prevent the spread of the (continued on page 2)

Honors

USGS Scientist Receives Graduate Scholarship Award: On June 14, USGS Pathways Intern Rachel Reagan received the Oregon State University Thomas G. Scott Grant Scholarship award as outstanding M.S. student in Fish and Wildlife. The purpose of the scholarship is to recognize the student's long-term research potential and academic record. Reagan is advised by USGS FRESC Fish Ecologist Jason Dunham and works with WFRC. For more information contact Steve Waste at swaste@usgs.gov or 509-538-2299.

Events

USGS Speaks at Western Washington University: On May 1 Scott Smith and Lisa Hayward spoke to an Integration of Environmental Science and Policy class at Western Washington University about their professional experiences at the interface of science and policy. Smith and Hayward were invited to speak by the class instructor, Tami Barry. For more information contact Scott Smith sssmith@usgs.gov or Lisa Hayward lhayward@usgs.gov at 206-526-6282.

USGS Hosts Community College Women in Science and Engineering Club: On May 24 WFRC hosted the Seattle Central Community College, Women in Science and Engineering Club (W.I.S.E.). Students were given a tour and presentations at the WFRC Center in Seattle. The W.I.S.E. is an award-winning club designed to offer guidance and support to women students studying math and science. For more information contact Jill Rolland at jrolland@usgs.gov or 206-526-6282.

(continued from pg. 1) disease, which can kill up to 90% of juveniles in an epidemic.

For ten years there was no further sign of the new viral strain in coastal WA, but in May of 2007 it reappeared. Over the next five years eight separate epidemics occurred in seven different fish culture facilities in four distinct watersheds. During the same period the virus was also detected in asymptomatic adult steelheads in six coastal WA watersheds.

Drawing on established partnership, regional hatchery and fish health co-managers worked closely with WFRC throughout the recurring outbreaks to monitor fish at 11 different fish culture facilities. Using a combination of careful hatchery records and diagnostic surveillance provided by fish managers and genetic analysis conducted by USGS, the team accomplished sophisticated epidemiological work that would not have been possible for any group working independently.

Taken as a whole the data suggest two distinct waves of emerging virus between the years 2007-2011, which when combined with the outbreak in 1997, suggest three separate introductions into coastal WA over the last fifteen years. The data also suggest that all three waves of viral emergence likely originated in the Columbia River Basin. Together with colleagues from the U.S. Fish and Wildlife Service, and the Washington Department of Fish and Wildlife and the Northwest Indian Fisheries Commission, the group presented their results in a paper in the May issue of *Diseases of Aquatic Organisms*: http://goo.gl/1UZLe

How the virus reached coastal WA from the Columbia River Basin is a mystery. For 30 years the steelhead-specific form of IHNV was prevalent in the Columbia, but stayed in the basin. Hundreds of miles separate the Columbia River Basin from the waters of coastal WA, and the rivers and ocean between are full of wild and hatchery trout. Until we learn how the disease spread we cannot prevent further spread, which could imperil federally threatened Puget Sound Steelhead in nearby rivers. WRFC scientists will continue to work closely with hatchery managers and other tribal, university and agency partners to better understand IHNV and to improve management of steelhead trout, a valuable Northwest resource. For more information contact Rachel Breyta at rlife@usgs.gov or 206-526-6282 x277

New Publications

WFRC Report Guides Development of GIS Layers for Wetland restoration: The USGS recently completed an open-file report titled "Tidal Wetlands of the Yaquina and Alsea River Estuaries, Oregon: Geographic Information Systems Layer Development and Recommendations for National Wetlands Inventory Revisions". For more information, visit http://pubs.usgs.gov/of/2012/1038/ or contact Deborah Reusser at dreusser@usgs.gov or 541-867-4045.

WFRC Report Assesses Lost River and Shortnose Sucker Movement and Mortality: The USGS recently completed an open-file report titled "Assessing Movement and Sources of Mortality of Juvenile Catostomids Using Passive Integrated Transponder Tags, Upper Klamath Lake, Oregon—Summary of 2012 Effort". For more visit http://pubs.usgs.gov/of/2013/1062/ or contact Summer Burdick at sburdick@usgs.gov or 541-273-8689.

New Publication Investigates Swimming Performance of Tagged Fish: WFRC scientists authored a new publication in *Transactions of the American Fisheries Society* titled "Comparing effects of transmitters within and among populations: Application to swimming performance of juvenile Chinook salmon." For more visit http://goo.gl/0Pstj or contact Russell Perry at rperry@usgs.gov or 509-538-2299.

WFRC Report Demonstrates Feasibility of Capturing Wild White Sturgeon Larvae for Use in Restoration: The USGS completed an open-file report titled "Capture of white sturgeon larvae downstream of The Dalles Dam, Columbia River, Oregon and Washington, 2012". For more, visit http://pubs.usgs.gov/of/2013/1110/ or contact Mike Parsley at mparsley@usgs.gov or 509-538-2299.

New USGS Research Published on Invasive New Zealand Mud Snail: WFRC scientists published a paper in *Journal of Molluscan Studies* titled "Intragenomic sequence variation at the ITS1-ITS2 region and at the 18S and 28S nuclear ribosomal DNA genes of the New Zealand mud snail, *Potamopyrgus antipodarum* (hydrobiidae: Mollusca)." For more visit http://goo.gl/RN0SG or contact Marshal Hoy at mhoy@usgs.gov or 206-526-6282.

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