USGS
science for a changing world
December 2013 | Issue 2.0

Western Fisheries Research Center (WFRC)

Western Fisheries Science News

An invasive Green Crab holds a CD with a database used to create the Atlas of Nonindiginous Marine and Estaurine Species of the North Pacific .

"Upcycling" Old Data to Address New Challenges

In 2003 Debbie Ruesser, a WFRC computer scientist, married Henry Lee II, a marine biologist with the Environmental Protection Agency (EPA). One day she said to him "You know, you really need to organize your data." Soon after was born what has since become the Coastal Biogeographical Risk Analysis Tools (CBRAT : http://cbrat.org/), a web accessible database that organizes biological and geographical information for thousands of marine species. By creating a hierarchical system of multiple categories for natural history information at varying scales, Ruesser and Lee have standardized information from disparate sources including manuscripts, reports and old reference books. Their resulting database allows for analysis and vulnerability assessments to help identify the species and ecosystems most vulnerable to changes such as those related to climate and invasive species. In October of 2013 Reusser, Lee and their EPA colleague Katie Marko were awarded a medal by the Office of Research and Development for the Western Ecology Division of EPA.

The award honored Reusser and Lee's work to synthesize the distributions and natural histories of (continued on page 2)

In the News

Earthfix Story on Lampreys: On Dec. 17, WFRC scientists Matt Mesa, Lisa Weiland, and Helena Christiansen were featured in *Earthfix*. The article, including video and sound clips, covered how Mesa's work with lamprey is helping to understand and recover this important species. Full story here: http://goo.gl/F0vhzS. For more information contact Matt Mesa at mmesa@usgs.gov or 509-538-2299 x 246.

Events

Recovery Implementation for Endangered Klamath Basin Suckers: The first meeting of the Science Committee for the Recovery Implementation Team (RIT) for federally endangered Lost River and shortnose suckers was held in Klamath Falls, Oregon on Dec 11. WFRC scientists David Hewitt and Summer Burdick serve on the Committee, which assesses recovery actions and advises on research efforts. For more information, contact David Hewitt at dhewitt@usgs.gov or 541-273-8689.

USGS Speaks at Alaska Herring Meeting: WFRC Researcher Paul Hershberger recently spoke about diseases of Pacific herring at the Alaska herring managers meeting in Anchorage, AK. This marked the first time in 20 years that all herring mangers (in all Alaskan fishing districts) convened at a single annual meeting. The implications of disease to herring stocks and management strategies were well-recognized, as Hershberger was the sole invitee from the lower 48 states. For more information, contact Paul Hershberger at phershberger@usgs.gov or 360-385-1007.

(from page 1) invasive species in the North Pacific into a 1,900 page "Atlas of Nonindigenous Marine and Estuarine Species in the North Pacific". The atlas contains status reports on 747 invasive fish, arthropods and other animals, only a subset of the species represented in the CBRAT database. While other resources help managers identify where invasive species occur, Reusser and colleague's work helps managers prevent future invasions by identifying potential invaders based on the habitat characteristics that they prefer.

Now Reusser and Lee are using the CBRAT framework to build risk analysis tools needed to conduct vulnerability assessments for species native to the Northeast Pacific from the Beaufort Sea to the Sea of California. Nearshore ecosystems will change rapidly in the coming years as temperatures increase, oceans acidify and habitats are altered or lost due to sea level rise. In order to best reduce the impacts of these changes, managers need vulnerability assessments to identify which species and ecosystems are most at risk and from what. Although the methodology by which vulnerability assessments are conducted is new and subject to revision, the beauty of the CBRAT database is that it organizes the data and makes it freely accessible in a way that will support alternate analyses in the future.

Reusser's expertise is primarily in computer science, but she has a rare ability to translate the needs of scientists into programming. Over the years her success at doing this has earned her teams many awards. In the mid 1990s she received two Hammer awards from the Clinton administration for her work to develop new mapping technology that would provide the public with an interface to access National Park Information. In 2007 she was awarded a USGS Shoemaker award in communications for her work on the National Atlas, a web-based source of many different kinds of spatial information managed by USGS. In 2010 she received her Ph.D. in geography, as she explains so she could better understand considerations of biogeography that are important to her work on CBRAT.

Reusser's career constantly evolves as she continuously pursues interesting questions and new challenges, developing productive synergies with many collaborators at different agencies along the way and mentoring young talent that she has brought to USGS through programs like the U.S. Department of State's Stay in School program. For more information contact Debbie Reusser at dreusser@usgs.gov or 541-867-4045.

WFRC Attends Klamath Basin Tribal Youth Employment and Education Initiative Meeting: On Dec. 12, Klamath Falls Field Station Chief Eric Janney was among Federal and Tribal agency attendees meeting in Quartz Valley, CA, to discuss youth employment and educational opportunities. The meeting aimed to increase the engagement, education and employment of young people in the outdoors and empower Native American communities in the Klamath Basin. For more information, contact Eric Janney, Eric_Janney@usgs.gov, at 541-273-8689.

Publications

New Diagnostic Tool for Globally Important Fish Virus: A research paper reporting the development and validation of a new diagnostic assay for the salmonid fish pathogen, infectious hematopoietic necrosis virus (IHNV) was recently published in the journal Diseases of Aquatic Organisms. The paper was co-authored by WFRC scientists, in collaboration with the US Fish and Wildlife Service and Fisheries and Ocean Canada. For more information visit http://goo.gl/GFyGwj or contact Maureen Purcell at mpurcell@usgs.gov or 206-526-6282 x 252.

New Publication on Climate Change Influences on Marine Infectious Diseases: Scientists from the Marrowstone Marine Field Station recently co-authored a manuscript titled "Climate change influences on marine infectious diseases: implications for management and society" in the Annual Review of Marine Science. For more information visit http://goo.gl/zsF1qG or contact Paul Hershberger at phershberger@usgs.gov or 360-385-1007, ext. 225.

New Publication on Fish Virus: WFRC investigators published a study comparing the relative virulence of four strains of viral hemorrhagic septicemia virus (VHSV) in five species of fish (yellow perch, rainbow trout, Chinook salmon, koi, and Pacific herring) in the Dec 2013 issue of *Diseases of Aquatic Organisms* http://goo.gl/a3gd7X This was the first study to directly compare mortality in fish experimentally exposed to VHS virus strains from the Great Lakes, North American West and East coasts, and Europe. For additional information contact Evi Emmenegger at eemmenegger@usg.gov or 206-526-2276.

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