Apr 6th, 1:30 PM - 3:00 PM

Advances in Understanding the Drivers of Change and Potential Conservation Actions for Pacific Herring in the Salish Sea

Tessa B. Francis
University of Washington, Tacoma, tessa@uw.edu

Advances in Understanding the Drivers of Change and Potential Conservation Actions for Pacific Herring in the Salish Sea

This session offered the latest results from researchers in the USA and Canada based upon cutting-edge approaches to understanding what limits Pacific herring populations in the Salish Sea, which are in decline in many places, and what management actions can be taken to ensure their recovery and conservation. Margaret (Megsie) Siple described the importance of population diversity in Pacific herring for maintaining their overall stability (i.e., portfolio effects), and presented population model results showing increased adult mortality and age truncation (i.e., loss of older ages) over recent decades. Lorenz Hauser showed the most recent genetic microsatellite support for metapopulation structure in Puget Sound herring, i.e., subpopulations going extinct and recolonizing, driven by a combination of spawn timing and geographic distance, potentially with learned social migration behavior. Herring genetic diversity based upon spawn timing was further supported by Eleni Petrou's work; Petrou used an advanced restriction site-associated (RAD) sequencing approach to determine that genetic differentiation increases with difference in spawn timing. Petrou's results also supported the idea that populations with similar spawn timing are connected by migration. Finally, two presentations shed new light on potential challenges to early life stages of herring. Brooke Love presented recent research showing that high temperatures result in larval mortality and abnormalities, while adding acidified conditions (high pCO_2 levels) to high temperatures additionally led to respiratory difficulties, suggesting that both warming and acidification are factors that negatively affect herring development. Louisa Harding presented results showing for the first time that herring are also negatively impacted by stormwater runoff: inability to mobilize yolk energy stores, and cardiac stress when exposed to stormwater. Together, these results fill some major gaps in our understanding about limitations to recovery for herring in the Salish Sea, and suggest potential ways forward.