Cherry Point Herring Update, 2018

WDFW Herring Program Contacts:
*Adam Lindquist (Adam.Lindquist@dfw.wa.gov) Olympia office
Todd Sandell (Todd.Sandell@dfw.wa.gov) Mill Creek office

Photo by Florian Granger, Holmes Harbor 2018
2018 Herring biomass summary

• Across the southern Salish Sea, overall herring spawn biomass was 9,744 metric tonnes
  • up from 8,187 metric tonnes in 2017
• Survey effort was up ~7% in 2018 vs. 2017
• Cherry Pt. stocked declined from 337 to 249 metric tons (new low)
  • #8 in biomass out of 21 stocks
• 2018 survey effort at Cherry Point
  • 455 stations over 18 days
2018 Southern Salish Sea (SSS) Herring biomass summary by genetic grouping

Estimated Spawning Biomass of Pacific Herring Stocks in Puget Sound, 1973-2018

Metric tonnes

17,500
15,000
12,500
10,000
7,500
5,000
2,500
0


Other Stocks Complex
Cherry Point
Squaxin

All other stocks  Squaxin  Cherry Pt.
2018 SS Herring biomass summary, by Basin, since 2000

Regional herring spawn biomass for SSS since 2000

- South Central
- Hood Canal
- Strait of Juan de Fuca
- Whidbey
- North
- San Juan Islands

Metric tonnes

Estimated herring spawning biomass in the Northern basin since 2008
Cherry Point 2018

- **Spawn**
- **No Spawn**
Spawning behavior of CP stock

- Timing: 2018 had a long gap between 2\textsuperscript{nd} and 3\textsuperscript{rd} (final) spawn events
  - Spawning dates were 4/23, 5/4, and 5/30
Acoustic Vegetation Survey at CP

This survey was conducted to test our assumption on a 60 meter wide vegetation band used in biomass calculations.

Biosonics DT-X 120 kHz transducer

22 ft Almar survey vessel “Caurinus”
Acoustic Vegetation Surveys: What We Learned

• Most of Cherry Point has vegetation bands wider than 60 meters

• Some vegetation types are harder to detect with acoustics

• Seasonality of vegetation growth could drastically effect biomass estimates

• Some type of verification method needs to be used, such as drop cameras or ROV video

• Switching to a 200 kHz may help with data collection and analysis
  • Would allow the use of a smaller vessel, covering shallower habitat
  • Better penetration through vegetation canopy
Future & Ongoing Projects

Genetics- SeaGrant award with Lorenz Hauser, UW
• DNR funded gill net samples- were fish caught all CP fish? (2017 gill net results expected in winter 2019)
• Finer stock delineation for all of SSS (beyond microsats)
• Where else are CP herring encountered (using MWT samples)

Larval fish surveys – major data gap
• Evelyn’s data on light trap captures to date
• Utility of light traps for forage fish/herring?
• Light traps near Petrogas pier, Birch Head?
1) 2016-18: Christina Villalobos and Brooke Love (WWU):
   • Studied effects of lower pH (increased acidity) and temperature (10° vs. 16° C) on larval performance and survival and found:
     • Fertilization rates exceeded 80% in all treatments
     • Larval abnormalities averaged 17% with no significant difference between treatments
     • Embryo mortality was significantly higher at 16° and at lower pH

2) 2019-20: Megan Russell and Brady Olson (WWU):
   • Following up on Christina’s work, Megan will compare the effects of elevated pH and temperature on larval herring from CP and Quilcene Bay (HC)
     • Examine yolk exhaustion rates and feeding behavior at lower pH (increased acidity) and temperature (16 and 18° C)
WDFW Staffing

WDFW-Forage Fish staffing additions

• Moved Washington Conservation Corps (WCC) crew to Fish Program
  • Continue with Smelt and Sand Lance egg sampling
  • Provide additional help for herring surveys

• Added a seasonal technician to help with WCC and herring work

• Adding one Veterans Corp member to Mill Creek to help with herring work

• All this thanks to........
Questions?

(Adam.Lindquist@dfw.wa.gov)