

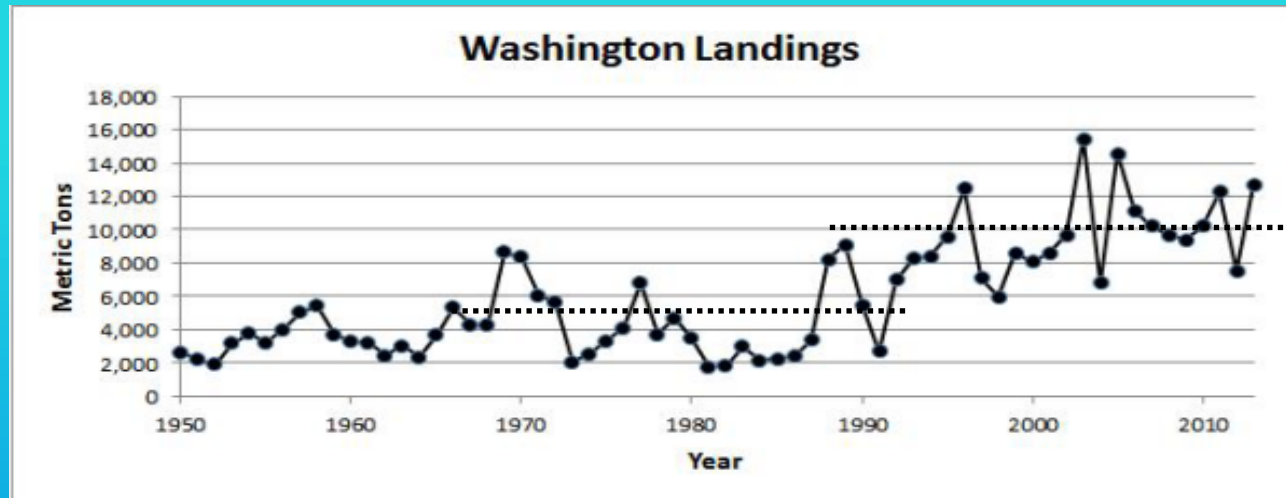


Formation of a Salish Sea Dungeness  
Crab Monitoring Working Group  
Recent Larval Crab Monitoring and Other  
Auxiliary Information

Presented by Dr. Evelyn Brown,  
Lummi Natural Resources

# We Badly Need a Regional Crab Working Group

Lots of Issues – Lots of Data Gaps



- Dramatic increase in socio-economic importance with salmon decline
- Increase in harvest
- Recruitment failures?
- Ecological importance of larval crab
- Unknown from anthropogenic risks
- Current management and enforcement capacity exceeded
- Collaborations and cooperation are required

# Developing and Implementing a Plan

- Implementation of critical monitoring was initial motivation
  - Early life stage monitoring deemed critical by three diverse groups (crab-fishery, salmon-, and forage fish-centric)
  - Implementation by two monitoring and one research group preceded development of formal plan
- Using PCSGA Forum to formalize group in workshop setting this September
- Develop type of plan, defined by mission, goals, and objectives, via decision tree
- Shape of plan depends on initiators, motivation of participants, and those seeking long term solutions rather than short term profits; in our case, tribal resource management agencies made the first move!

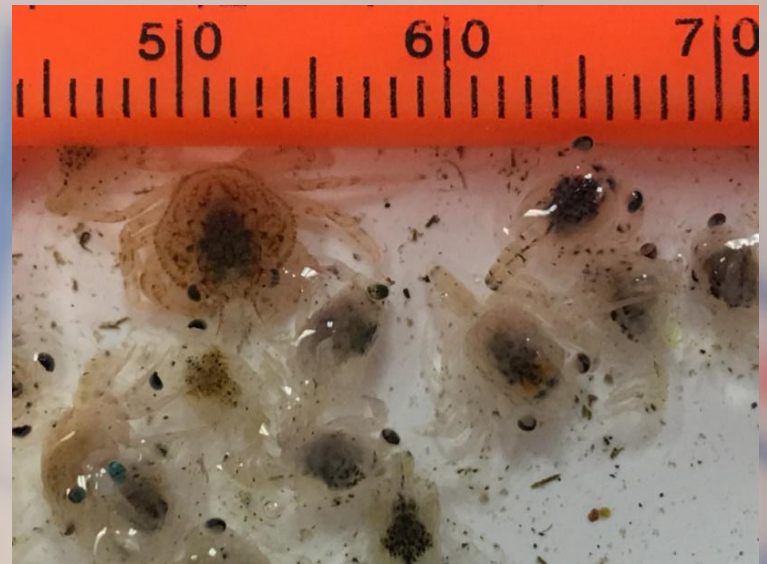
# Implementing Stage 1 Critical Monitoring

- MSP Bottom-up – Salmon love crab larvae
- Lummi and Swinomish doing it
- First meeting was in March
- Primary goal was filling research gaps
- Three key focuses are represented:
  - Crab recruitment
  - Crab as salmon food
  - Opportunity to also monitor forage fish



# Catches and Processing

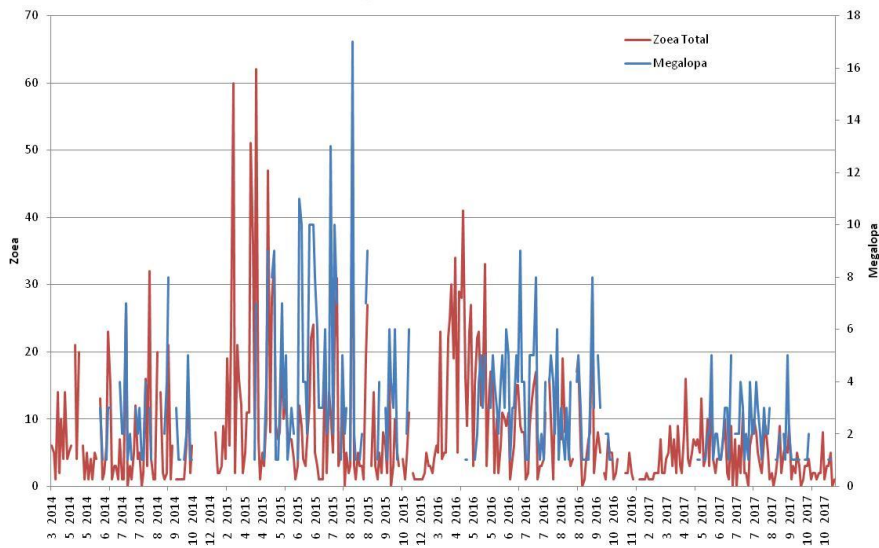
- Traps good for larval crab and fish
- Low by-catch
- Processing is quick
- Used grid-based method for big catches
- CPUE for comparisons
- Index samples saved for validation
- Easy to keep alive for 24 hrs if kept cool



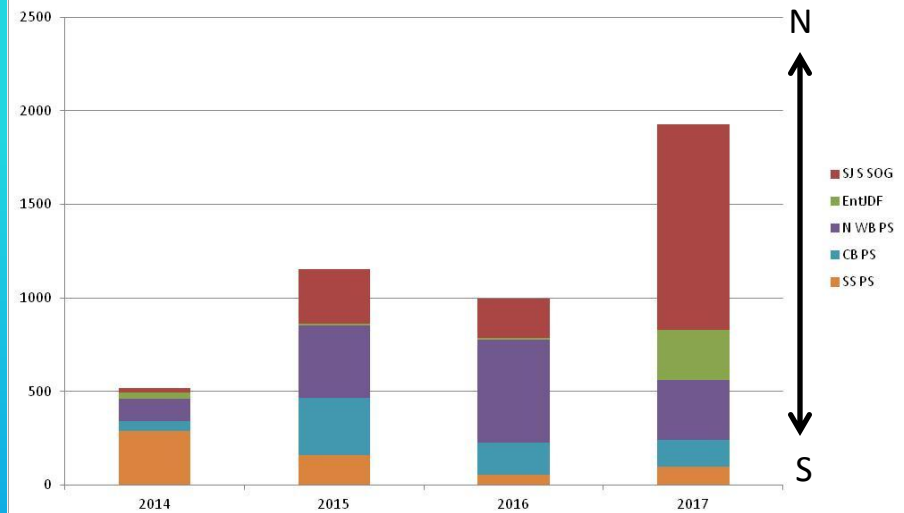
# Trends in Cancridae Crab – MSP Zooplankton Monitoring Program

21 Stations in US Salish Sea – 2018 is 5<sup>th</sup> Year

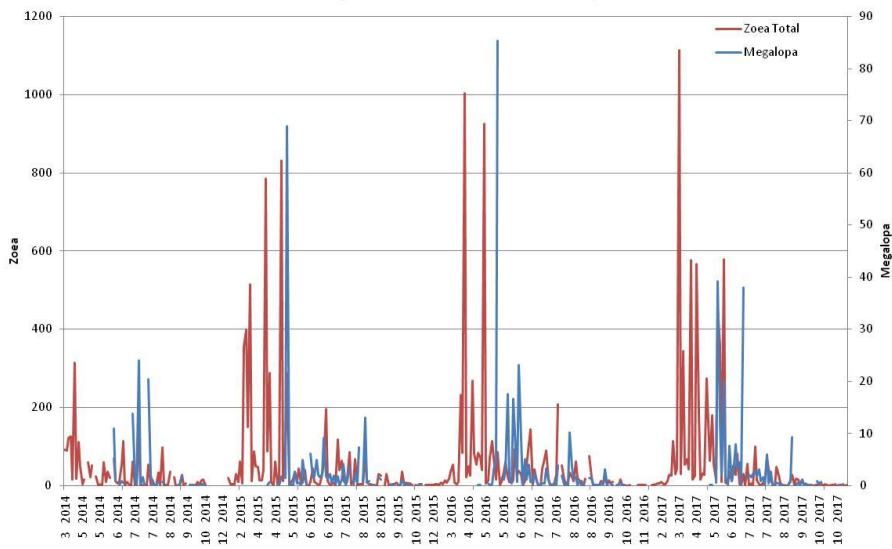
No of MSP Zooplankton Sets with Cancridae



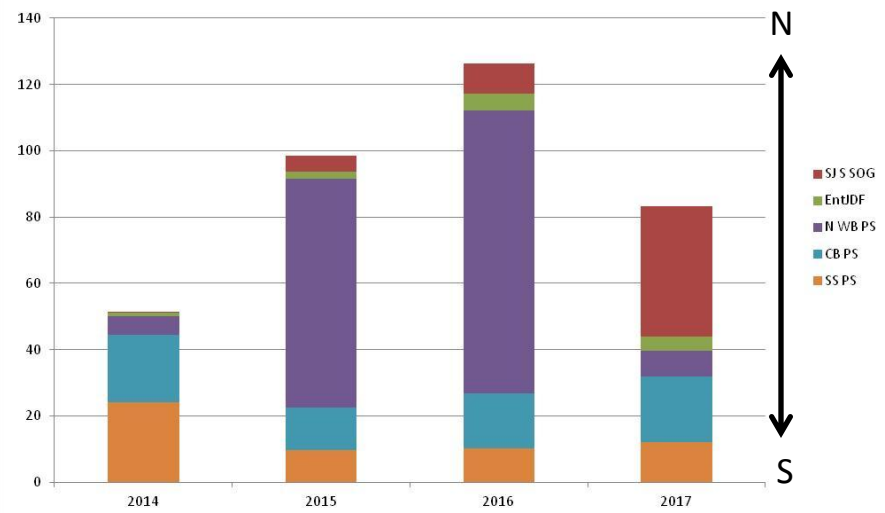
Annual Variation in Max. Density of Zoea Catches by Region



Maximum Density of Cancridae in MSP Zooplankton Sets



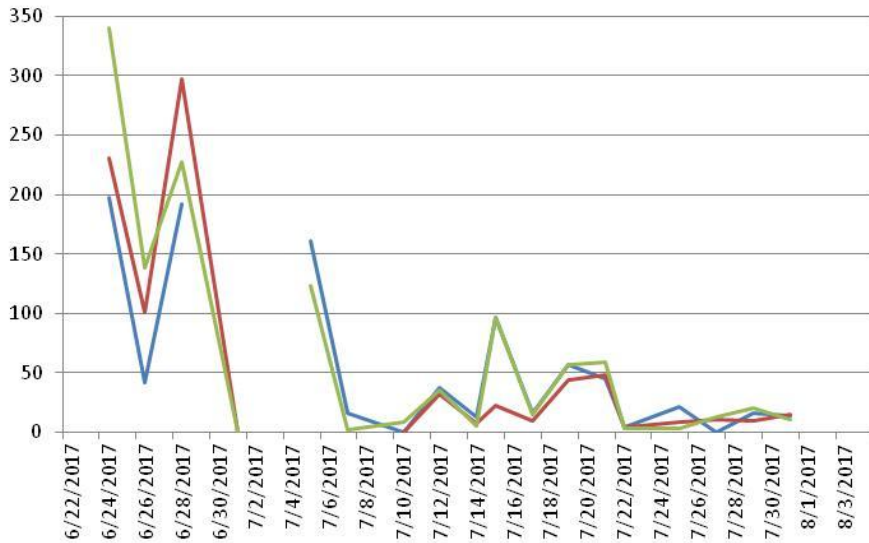
Annual Variation in Max. Density of Megalopa Catches by Region



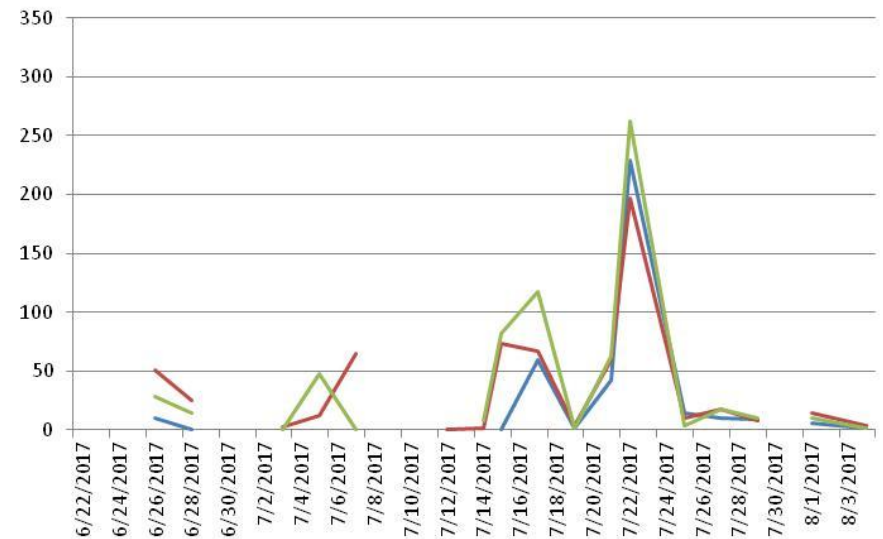
# Light Trap Catches

- Tested 3 traps per site at 3 sites
- Among site variation greater than within site
- Site with strongest tidal flux / exchange had highest catches (Hales Pass – below)
- Site exposed to ocean transport had second highest (Sandy Point)
- Site within a protected bay had lowest catches

Variation in Larval Crab CPUE Within a Site - Hales Pass (3 traps fished per site)

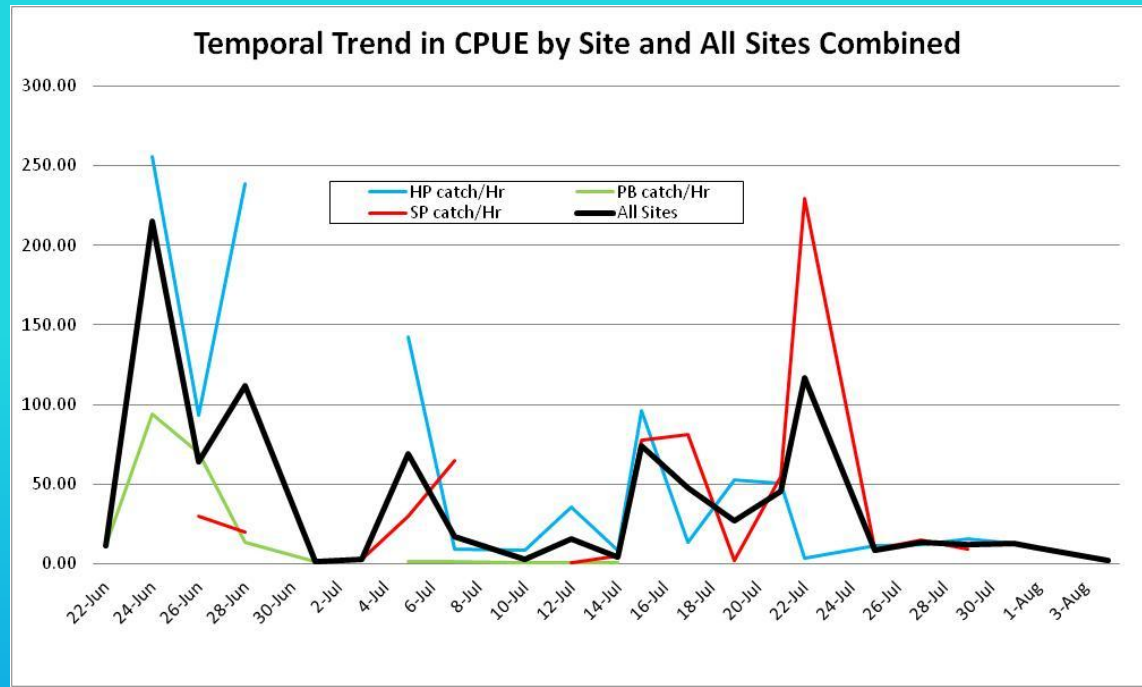


Variation in Larval Crab CPUE Within a Site - Sandy Point (3 traps fished per site)

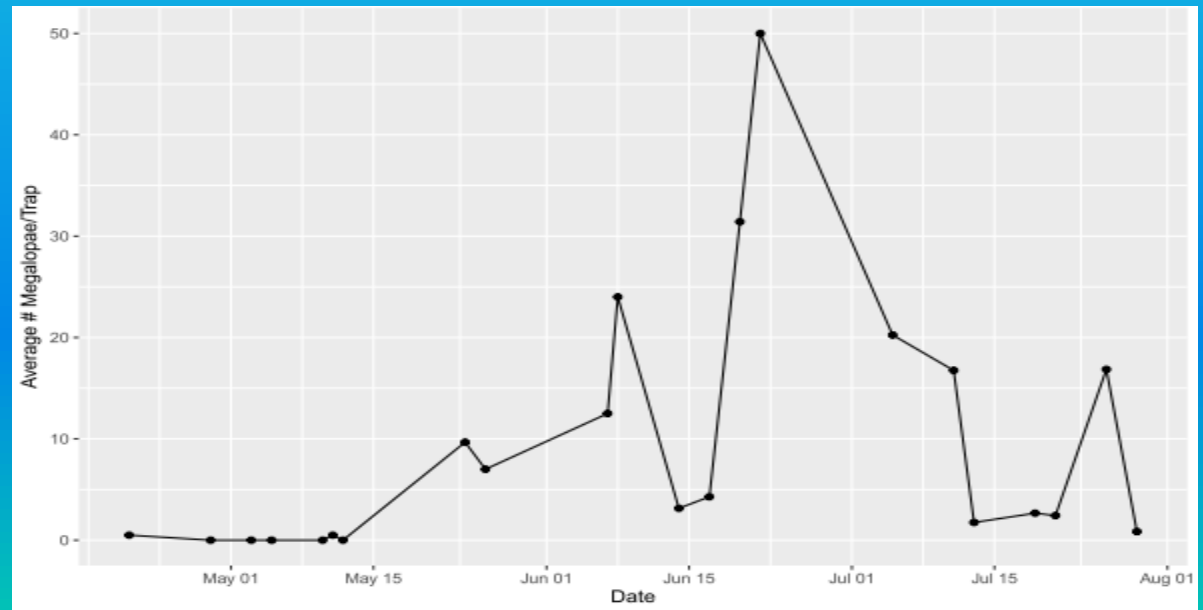


## Light Trap Catches

- Timing of recruitment varies among sites (Lummi Sites – Right)
- Major recruiting periods may reflect different population sources
- Within a recruiting period, CPUE appears to peak with higher tides series



CPUE from  
Lights Traps at  
NOAA's  
Mukilteo Site –  
2016  
(P. McElhany)





## Correlations Between Offshore Net and Light Traps Catches Within the Same Region?

- Left Axis: Ln (Max Megalop Dens) from MSP stations closest to light trap sites at San Juan Islands (KWT) and Eliza Island near the sothern end of Lummi Island (Lummi)
- Right Axis: Ln (Max Megalop CPUE) from two light trap sites; Hales Pass (HP LT) and Sandy Point (SP LT)

