

PEARL Blue Crab Survey: Analysis on Size and Environmental Factors

Sara Dapp



MORGAN
PATUXENT ENVIRONMENTAL AND
AQUATIC RESEARCH LABORATORY

Callinectes sapidus – ‘Beautiful Savory Swimmer’!!

Distribution

- ❖ Western Atlantic Basin (range from Massachusetts to Uruguay)

Economic Role

- ❖ Supports one of the Bay's most valuable commercial fisheries

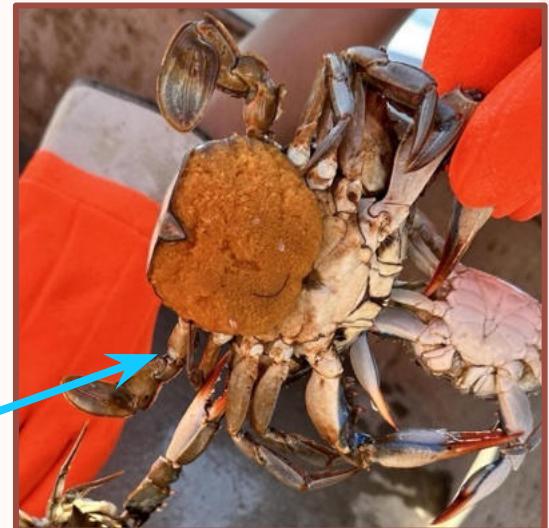
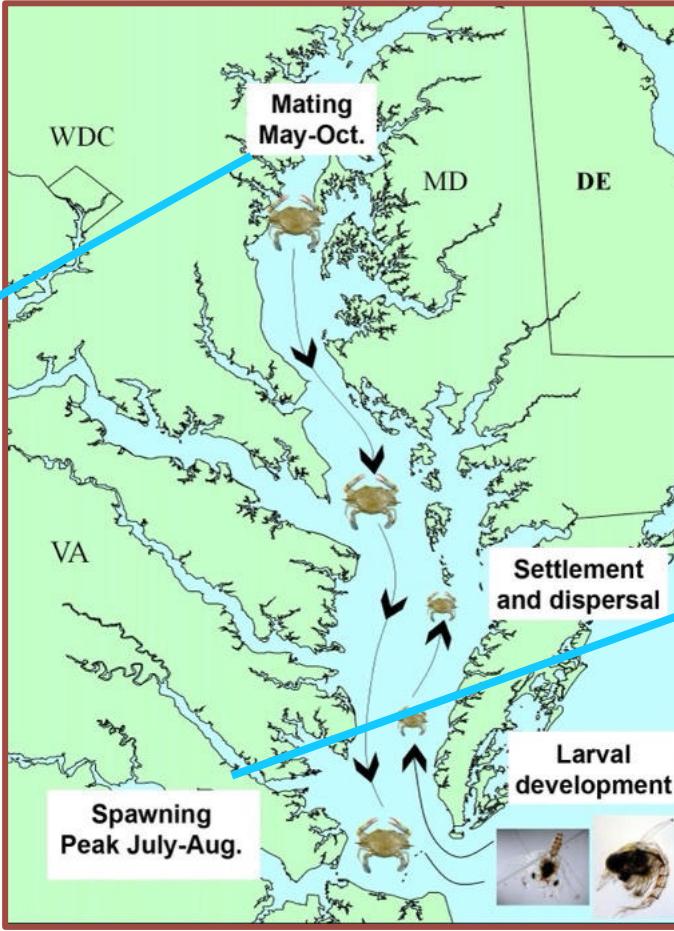
Ecological Role

- ❖ Benthic predators and prey for many other species in the Chesapeake Bay

Appearance



Life Cycle of the Blue Crab



Methodology

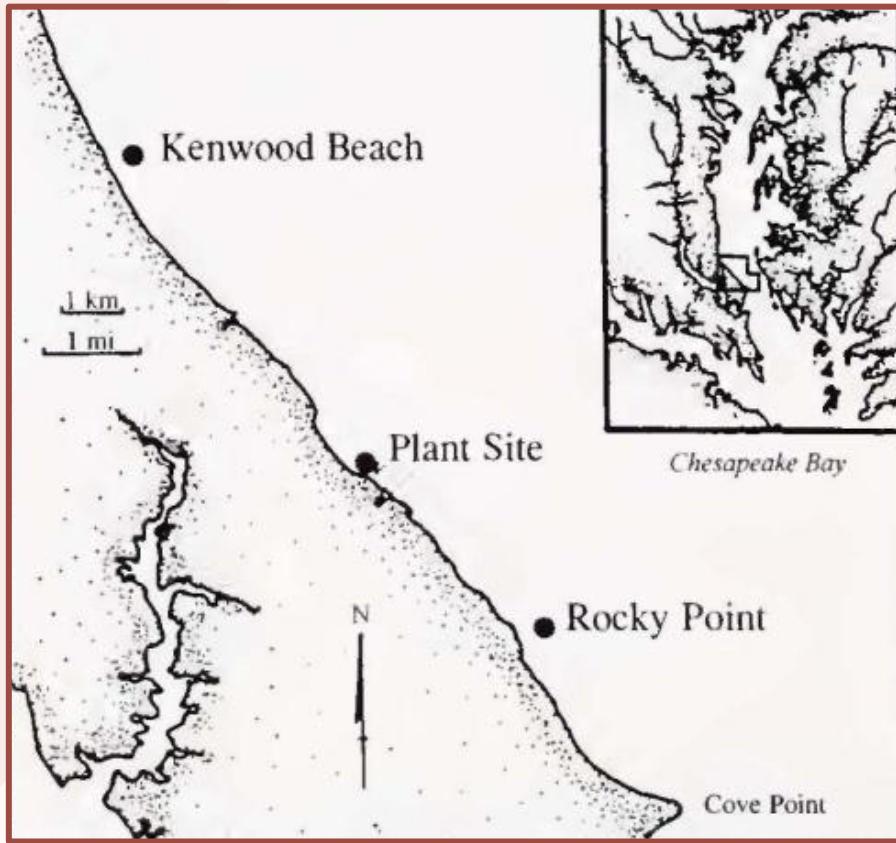


Photo: Abbe, G. & Stagg, C. 1995. Trends in Blue Crab (*Callinectes sapidus* Rathbun) Catches Near Calvert Cliffs, Maryland, From 1968 to 1995 And Relationship To The Maryland Commercial Fishery. *Journal of Shellfish Research*, St. Leonard, MD. pg.752



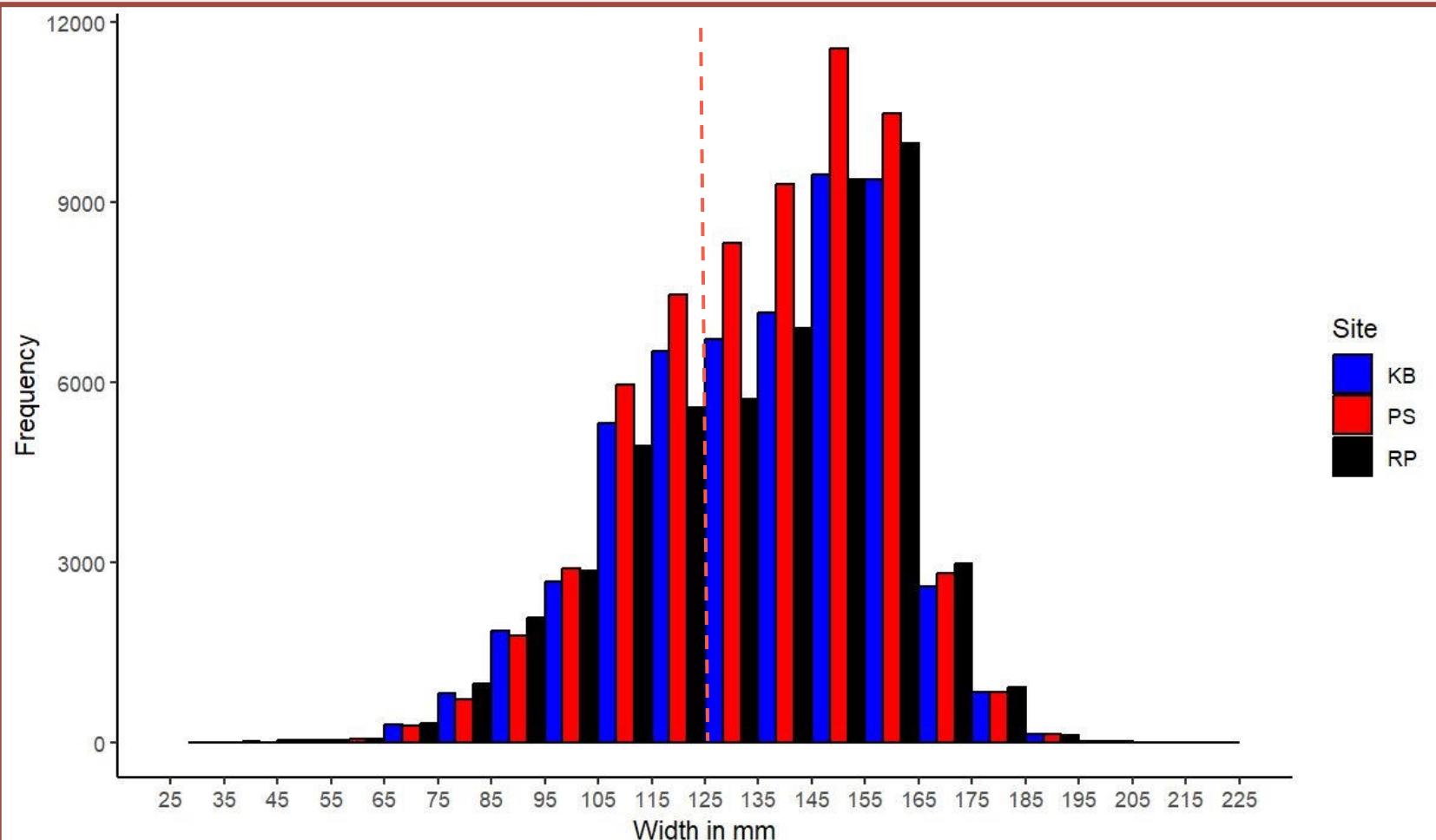
Collect data for Blue Crab Survey every other week (June-November)

Enter environmental data and merge into existing Blue Crab Survey dataset

Analyze data to investigate environmental effects on blue crab size for each site

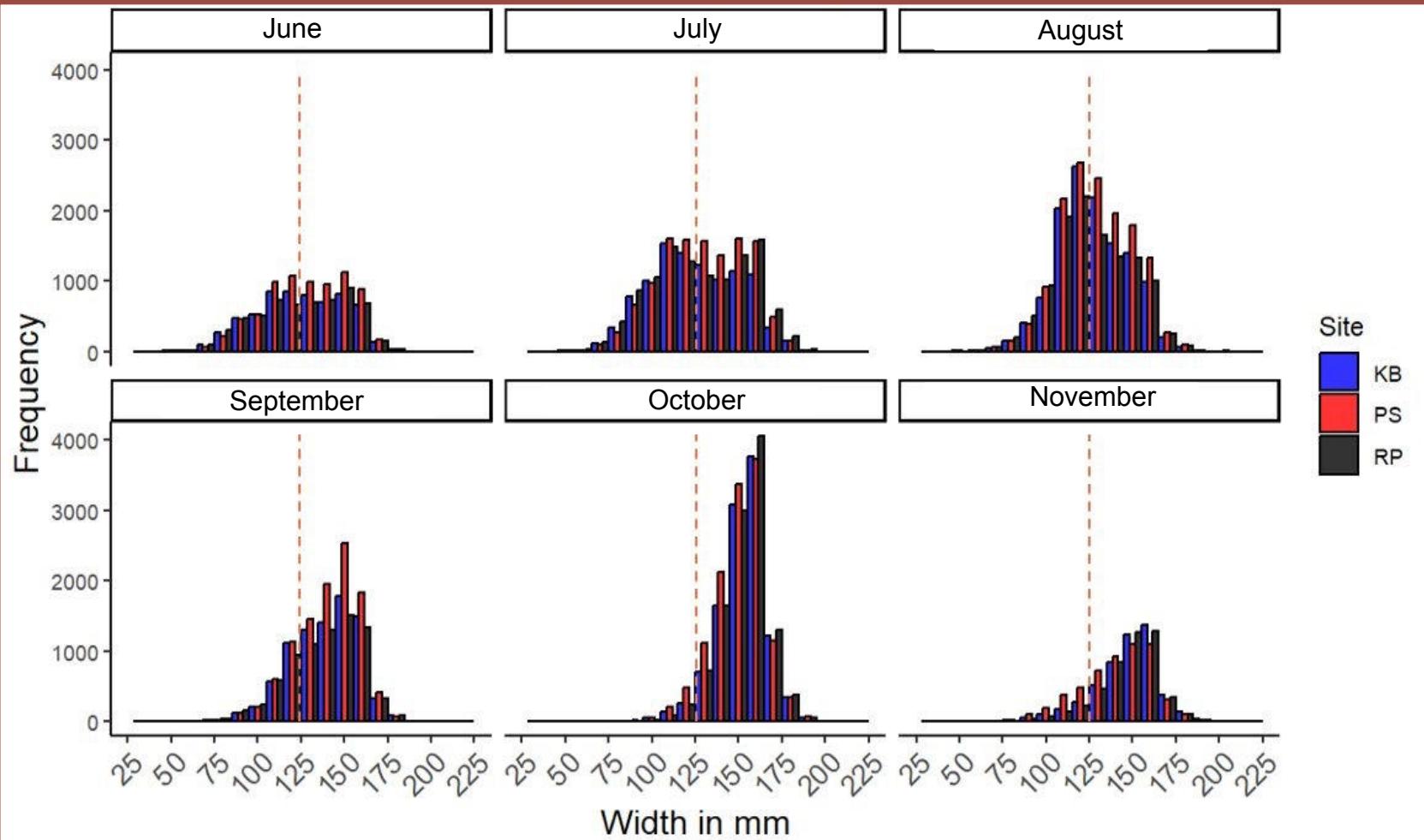
Results

Blue Crab Size Frequency



Results

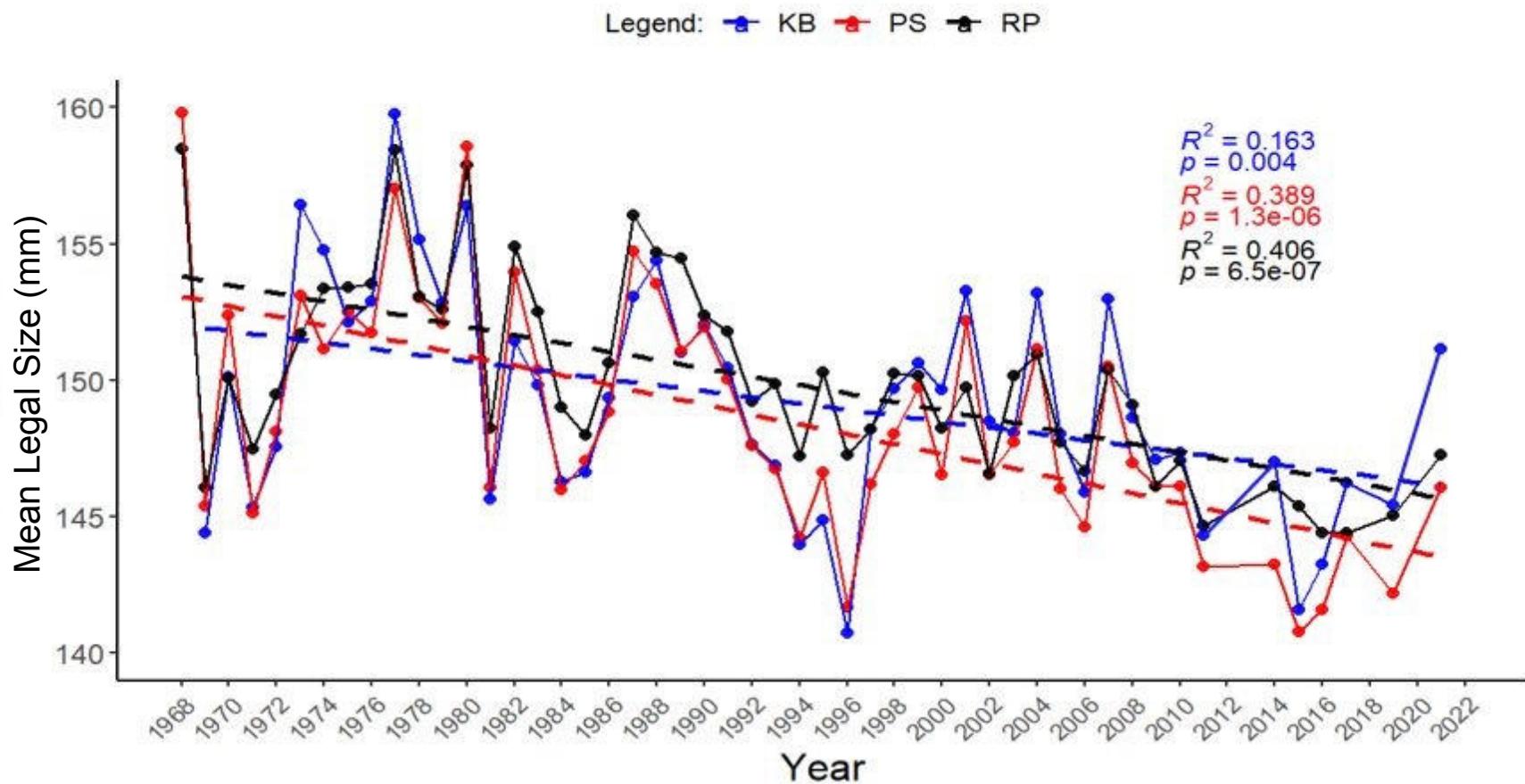
Blue Crab Size Frequency By Month



Results

Mean Legal Blue Crab Size Overtime (1968 – 2022)

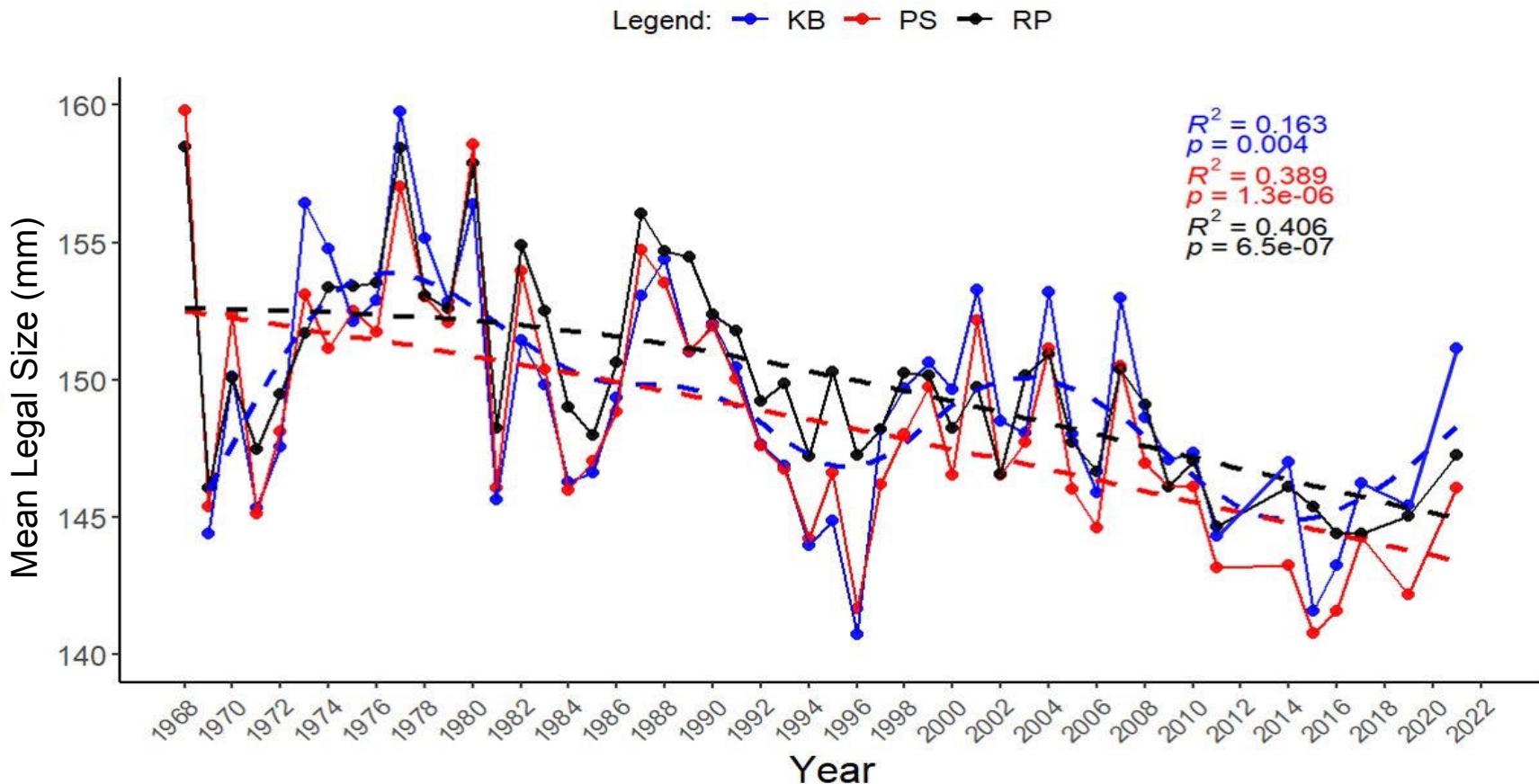
Mean Legal Blue Crab Size Overtime at Different Sites (1968-2021)



Results

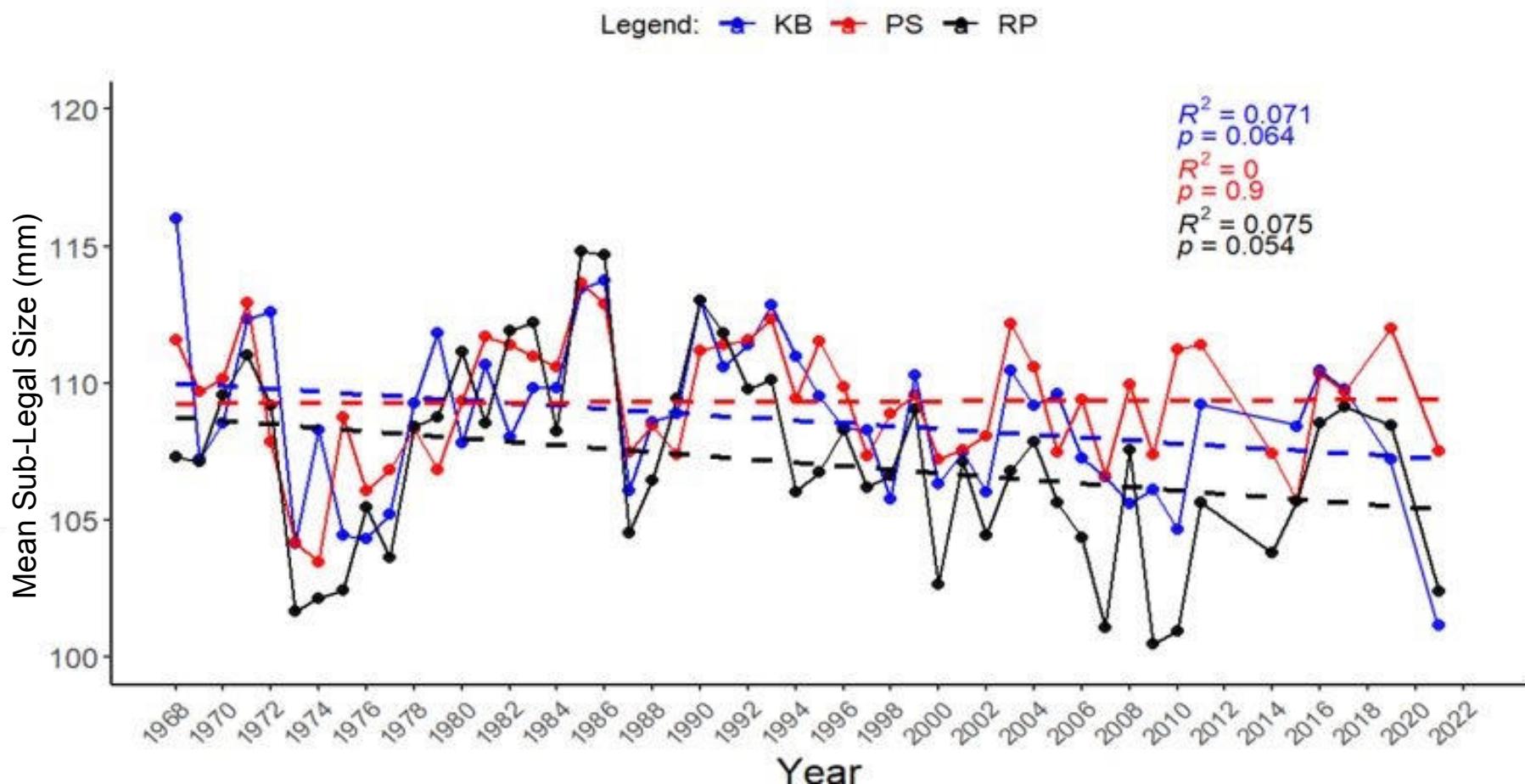
LOESS Model

Mean Legal Blue Crab Size Overtime at Different Sites (1968-2021)



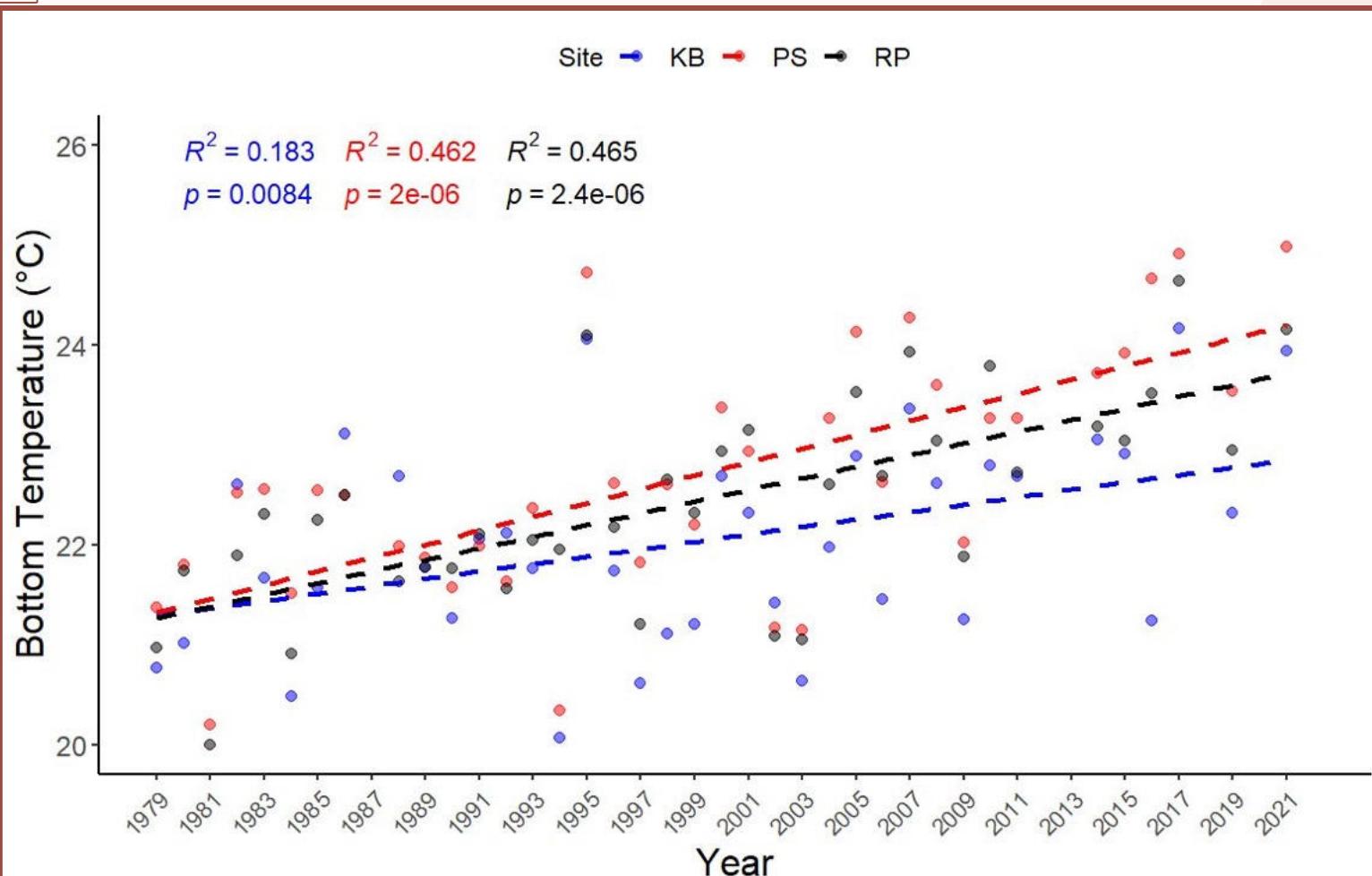
Results

Sub-legal Blue Crab Size Overtime (1968 – 2021)



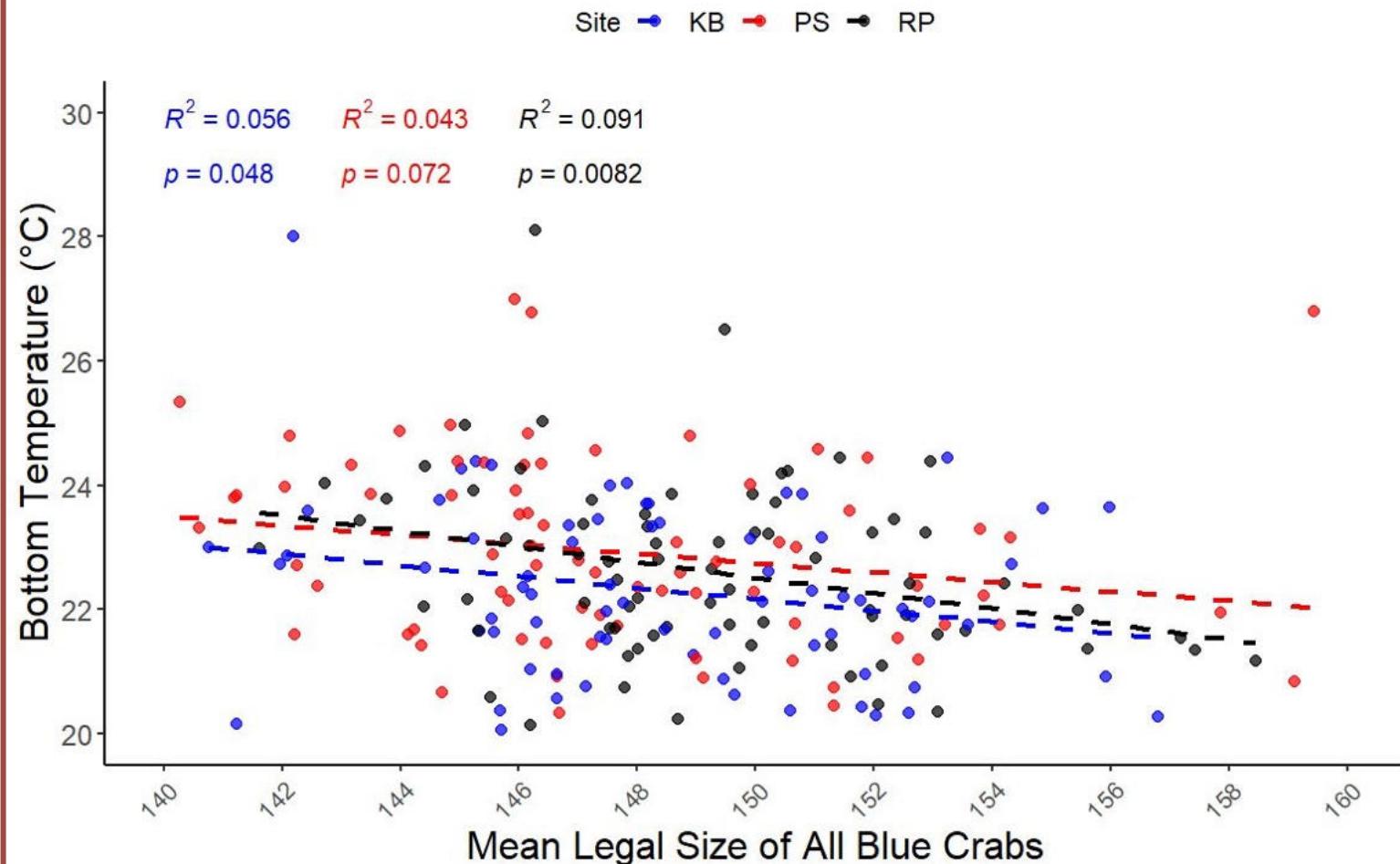
Results

Bottom Temperature Overtime



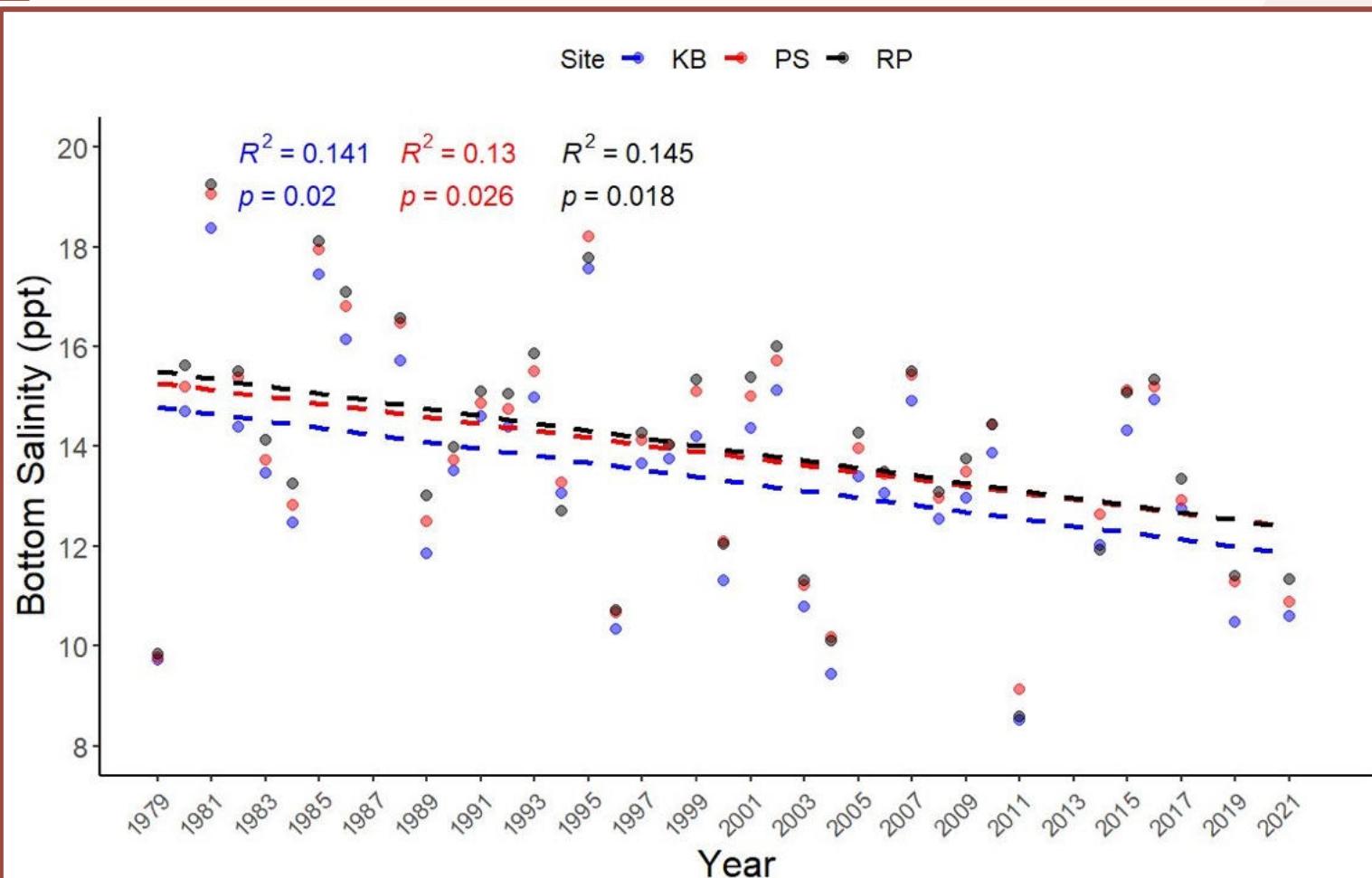
Results

Bottom Temperature Overtime – Mean Legal Size



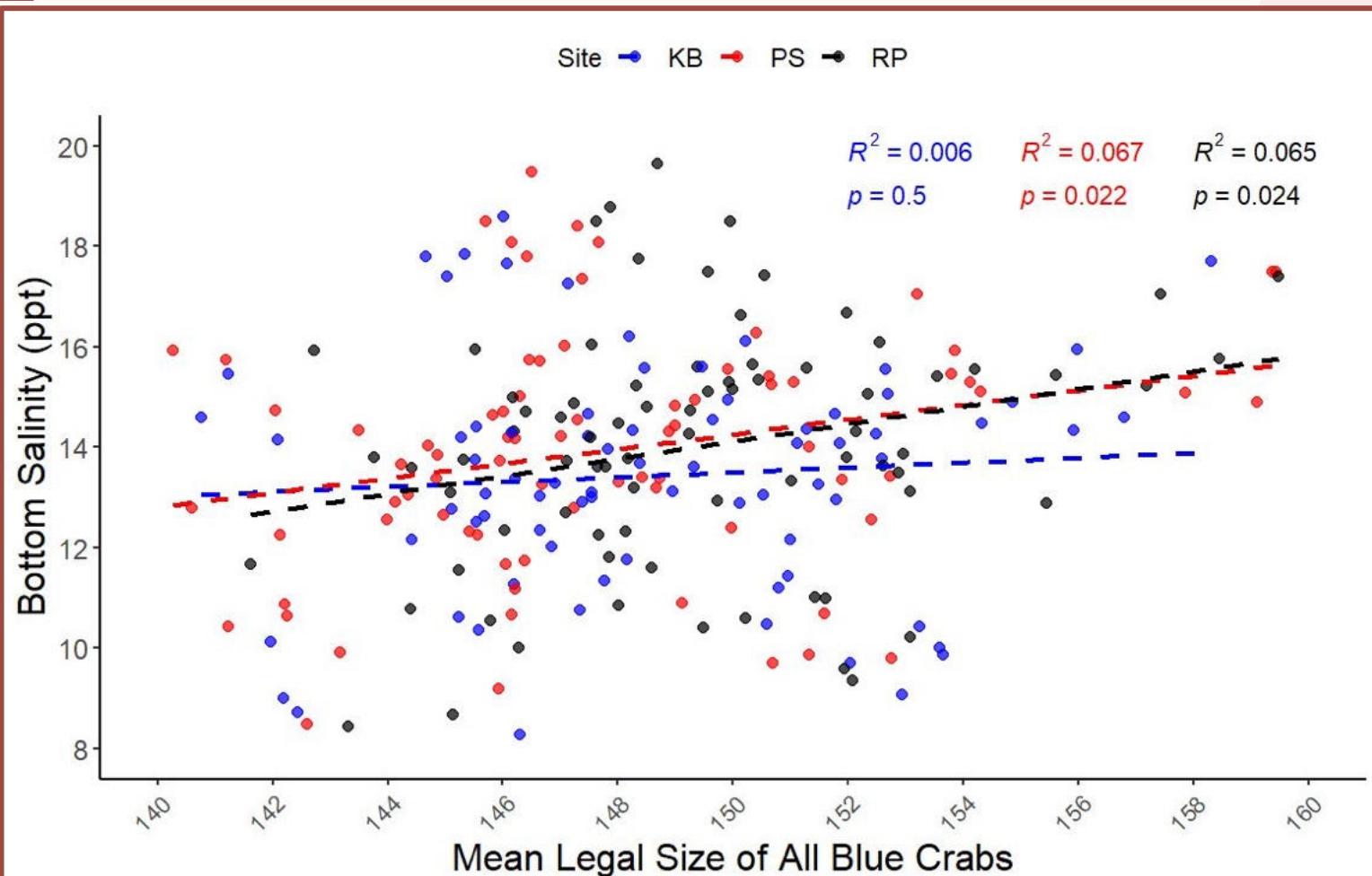
Results

Bottom Salinity Overtime



Results

Bottom Salinity Overtime – Mean Legal Size



Summary...

Legal Crab Size Overtime

- ❖ Significant decline from 1968 – 2021
- ❖ Kenwood Beach site is more variable
- ❖ Most frequent to see larger size crabs in October

Bottom Temperature

- ❖ Increasing significantly at all sites
- ❖ Larger crabs associate with colder temperatures
- ❖ Smaller crabs associate with warmer temperatures

Bottom Salinity

- ❖ Decreasing significantly at all sites
- ❖ Larger crabs in higher salinities
- ❖ Smaller crabs in lower salinities

Next Steps...

- ❖ What's driving the increased variability of size at Kenwood Beach site?
- ❖ **Understand better what factors are driving:**
- ❖ Larger crabs to be associated in waters with higher salinities
- ❖ Larger crabs to be associated in waters with cooler temperatures

Acknowledgments



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Thank
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Any
Questions?

