Analyses of *Callinectes sapidus* Catch & Environmental Data

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Abbe Blue Crab Survey

George Abbe: PEARL's first scientist (1967)

Determining the effects of thermal pollution on blue crabs

Crabs are sampled at three sites:

- Power Station (within)
- Rocky Point & Kenwood Beach (outside)

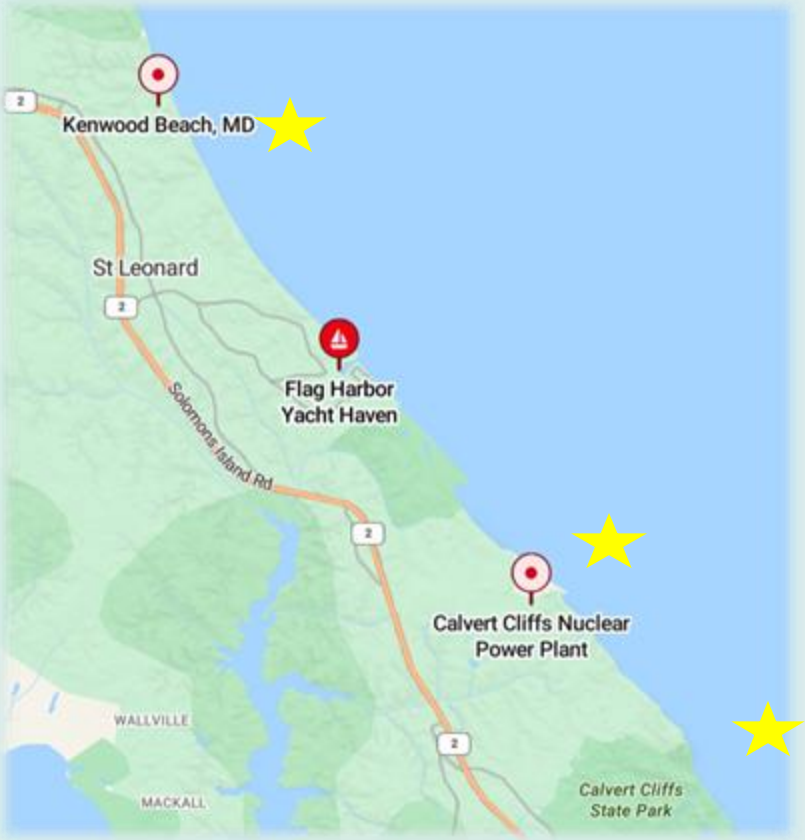


Photo: Google Maps

Abbe, G. R. 1973. Academy of Natural Sciences of Philadelphia, Benedict Estuarine Laboratory

BCS ‘24 Methods

Day 1: Drop Day

- Load boat
- Arrive to each site
  - RP, PS, KB
  - Take WQ at outside line
  - Drop pots (baited with menhaden)

Day 2: Pull Day #1

- Load boat
- Arrive to each site
  - Take WQ at outside line
  - Pull pots, dumping catch onto culling table
  - Record # of crabs & move into buckets
  - Re-bait pots and drop
- Return to lab for length & weight measurements

Day 3: Pull Day #2

- Repeat methods for day 2
- Secure pots on boat and bring back to Flag Harbor

Definitions

What is CPUE?

- Catch per unit effort
- Standardized measure of effort

What does environmental data mean?

- Temperature, Salinity, and Dissolved Oxygen collected throughout the survey period

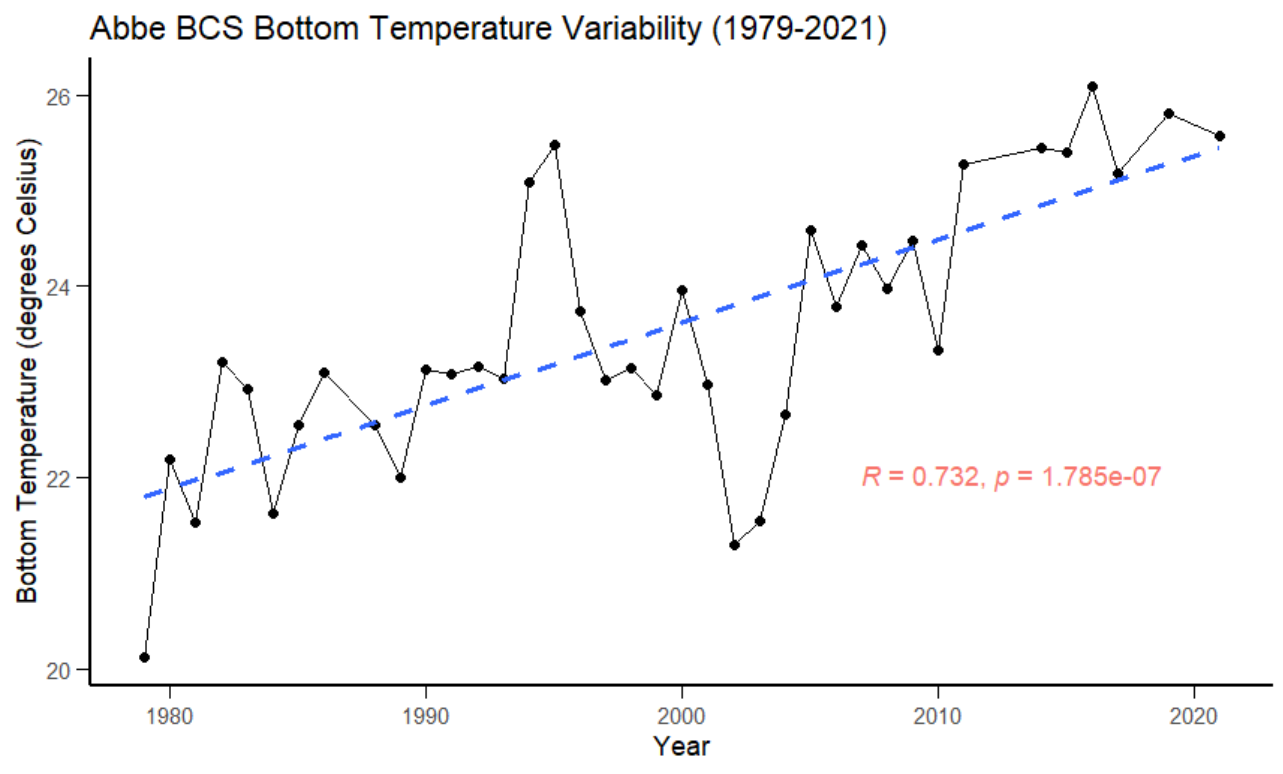
Research Methods

Research Question:

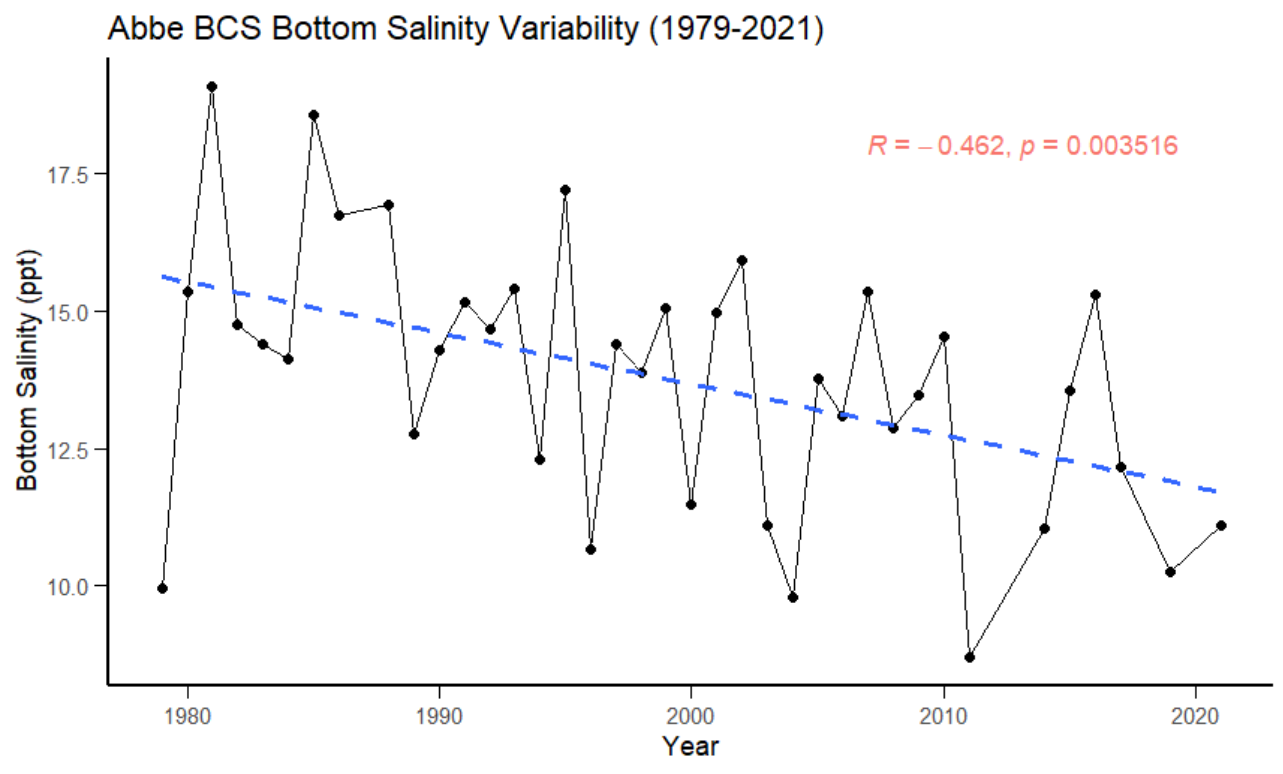
How does environmental variability relate to Blue Crab survey catch?

- Enter all environmental data from BC survey in Excel
- Merge this data with crab catch data to look for trends between survey catch and environmental data using RStudio

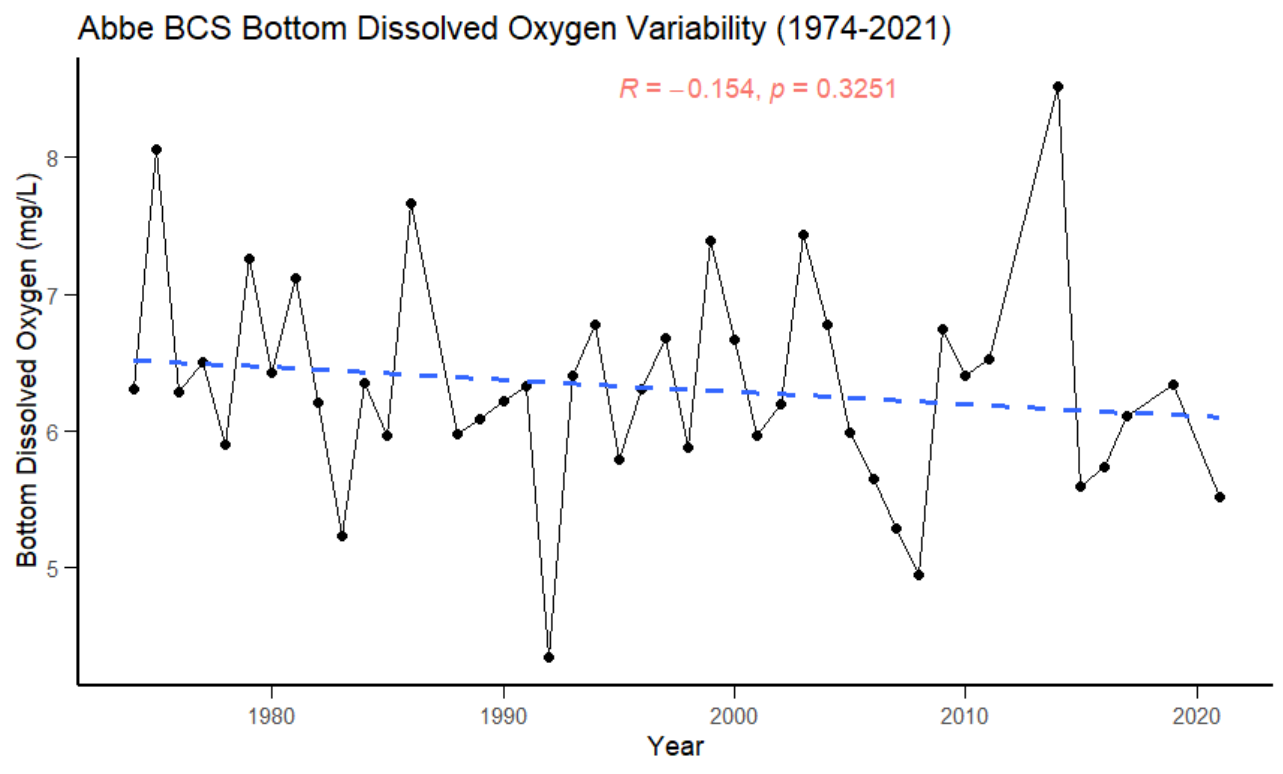
Average Bottom Temperature Variability



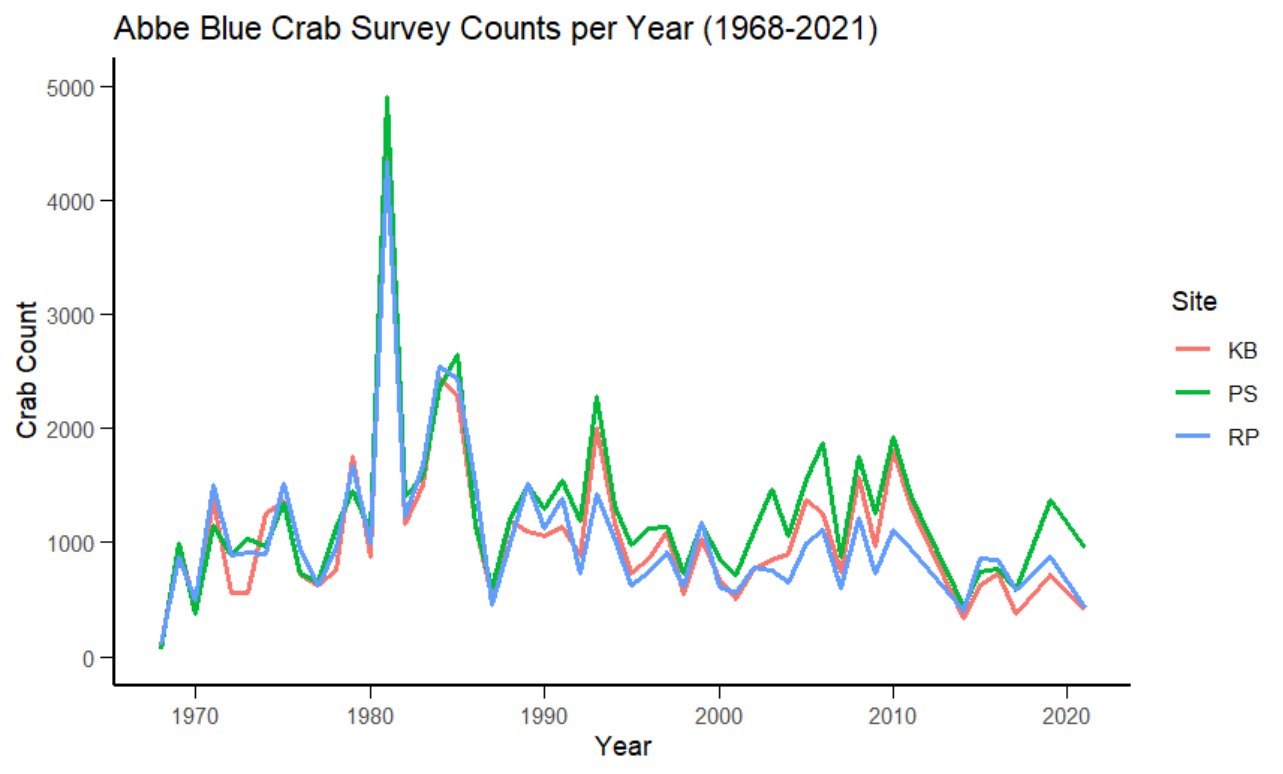
Average Bottom Salinity Variability



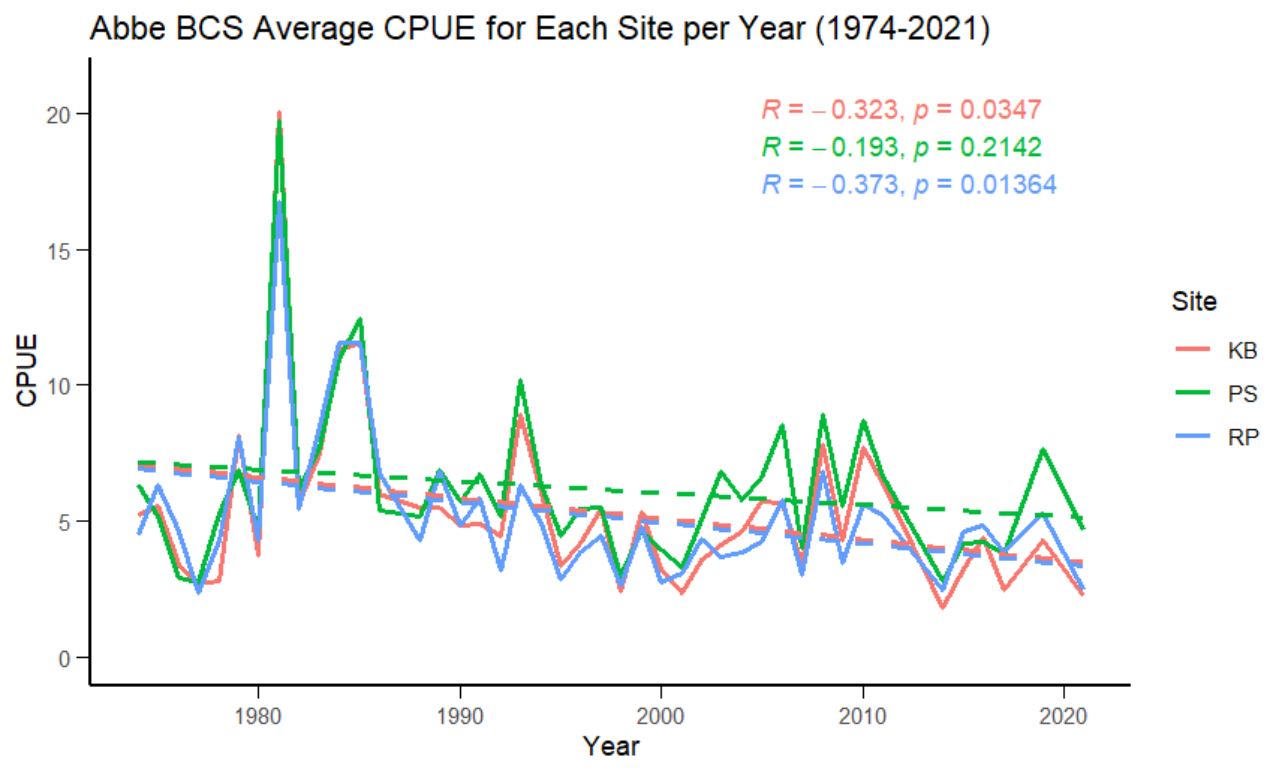
Average Bottom DO Variability



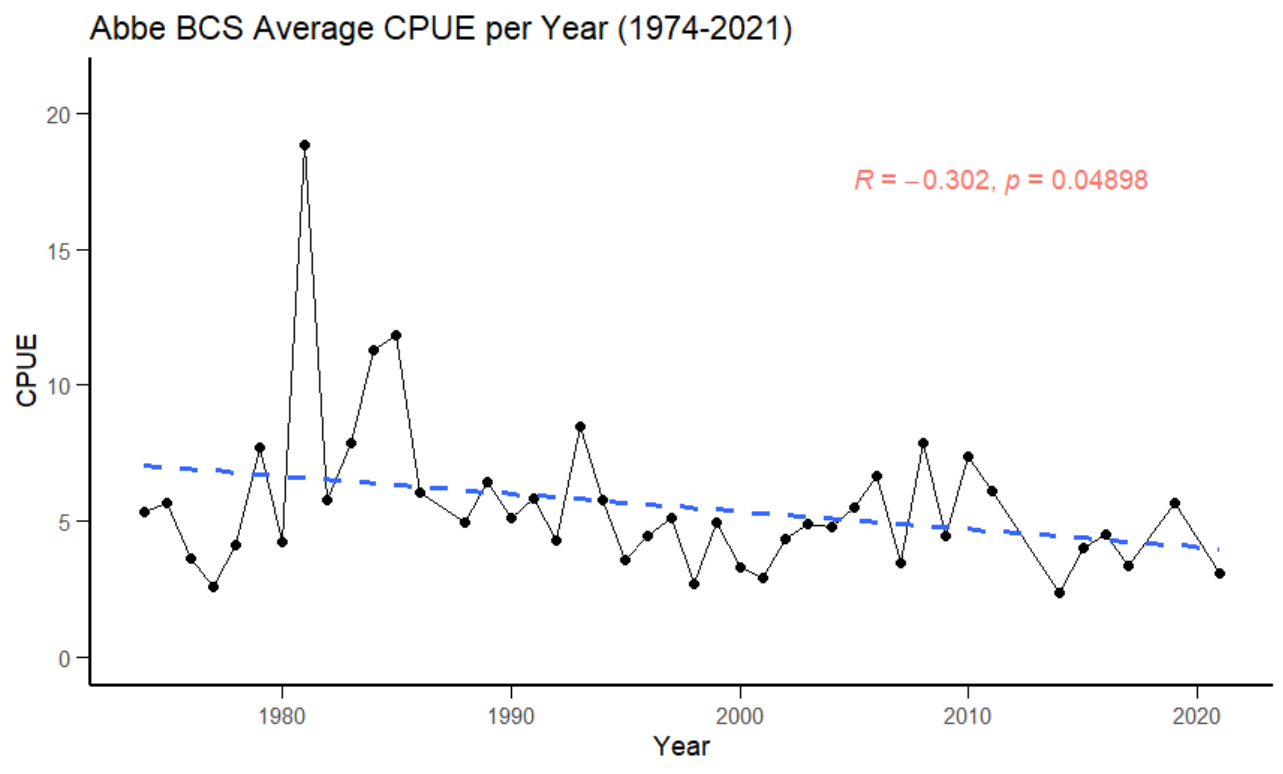
Total Catch per Site



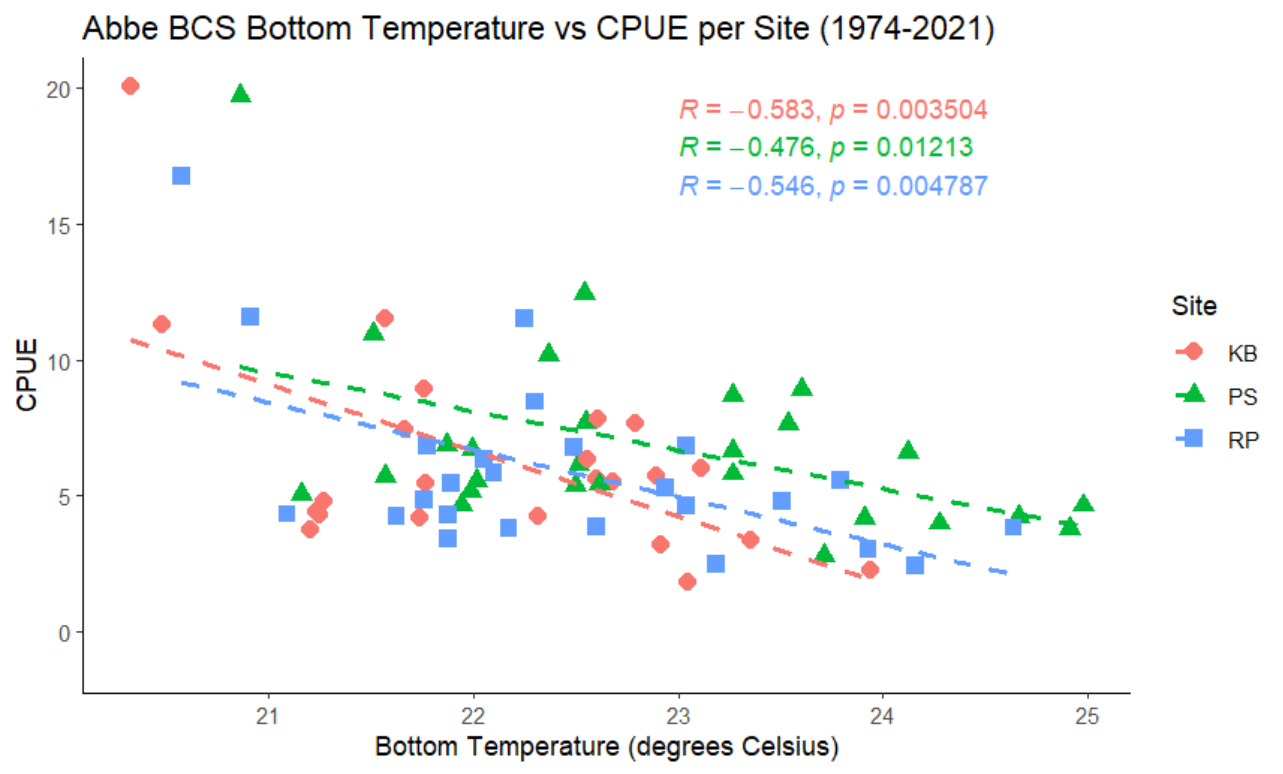
Average CPUE per Site



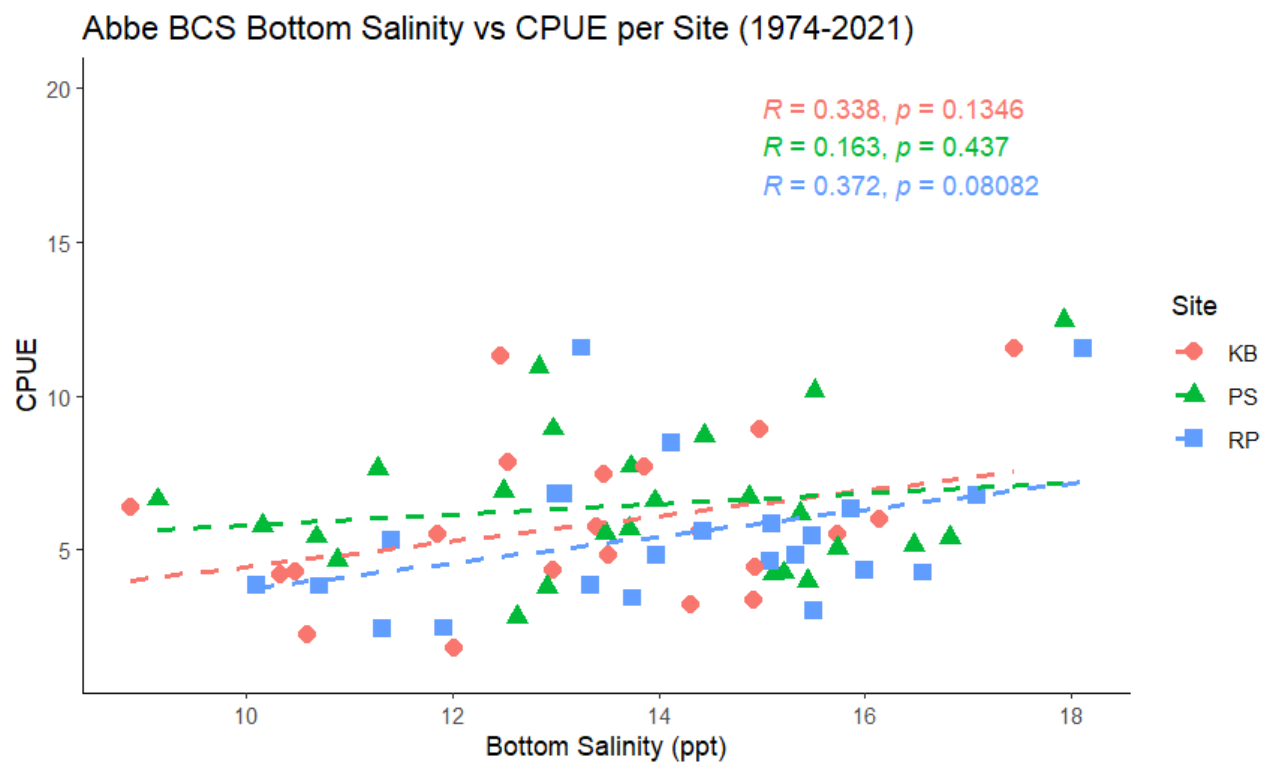
Average CPUE Over Time



Average CPUE vs Average Bottom Temperature



Average CPUE vs Average Bottom Salinity



Final Thoughts

Summary

Results suggest:

- Temperature is increasing & salinity is decreasing
- BCS catch decreases as bottom temperature increases and as bottom salinity decreases
- We may see fewer crabs

Next Steps

Analyze DO on an interannual scale

Commercial/recreational fishing?

- Increasing legal size
- Allow more reproduction time

Acknowledgements

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