

The 50+ Year PEARL Blue Crab Survey: The Value of a Long-term Perspective

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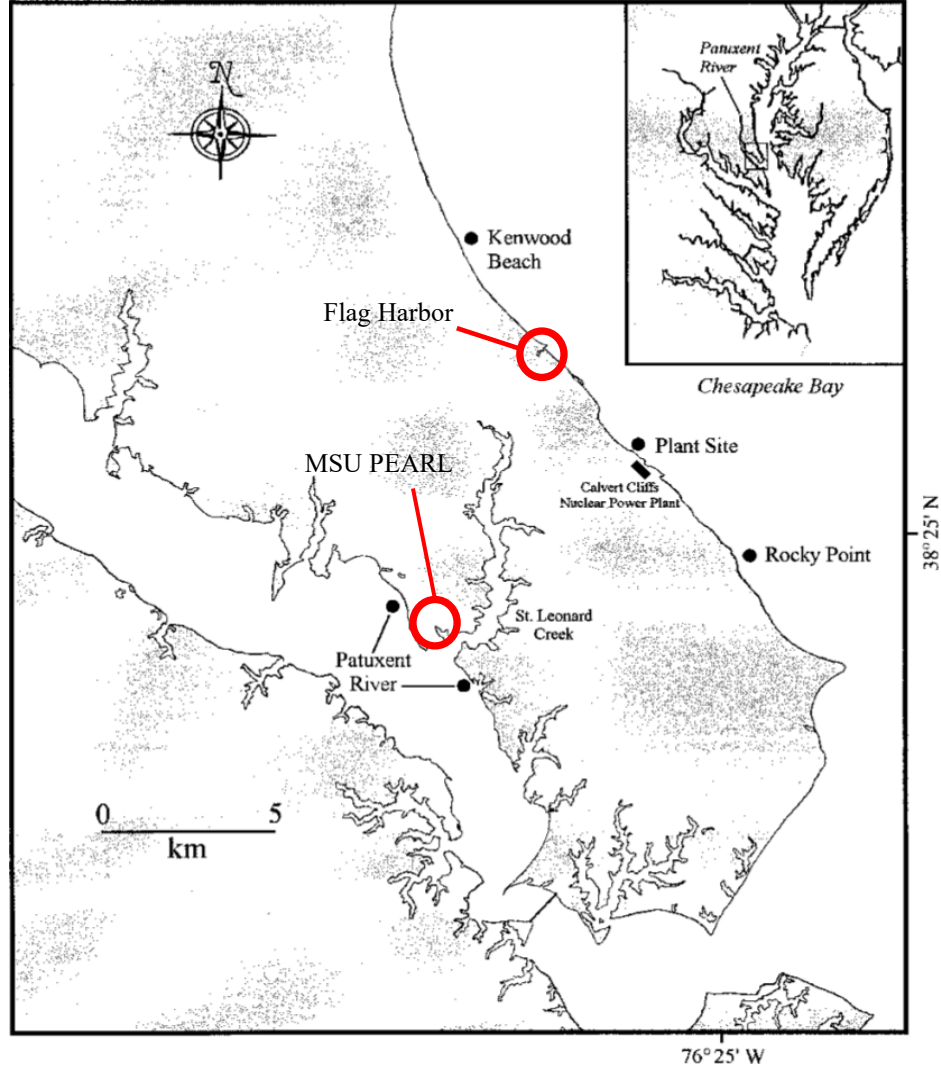


- George Abbe began PEARL's Blue Crab Survey in 1967 to monitor potential impacts of Calvert Cliffs Nuclear Power Plant -- Blue Crabs and Oysters

More than 50 years later...

- The longest scientific blue crab population study in the Chesapeake Bay
- Abundant training opportunities for young fishery & wildlife biologists





The Blue Crab Fishery & Landings in the Bay

The Value of Crustaceans:

- Highest valued commercial fishery in the Bay
- Chesapeake Bay represents ~34-42% of national Blue Crab landings and has historically represented up to 80%

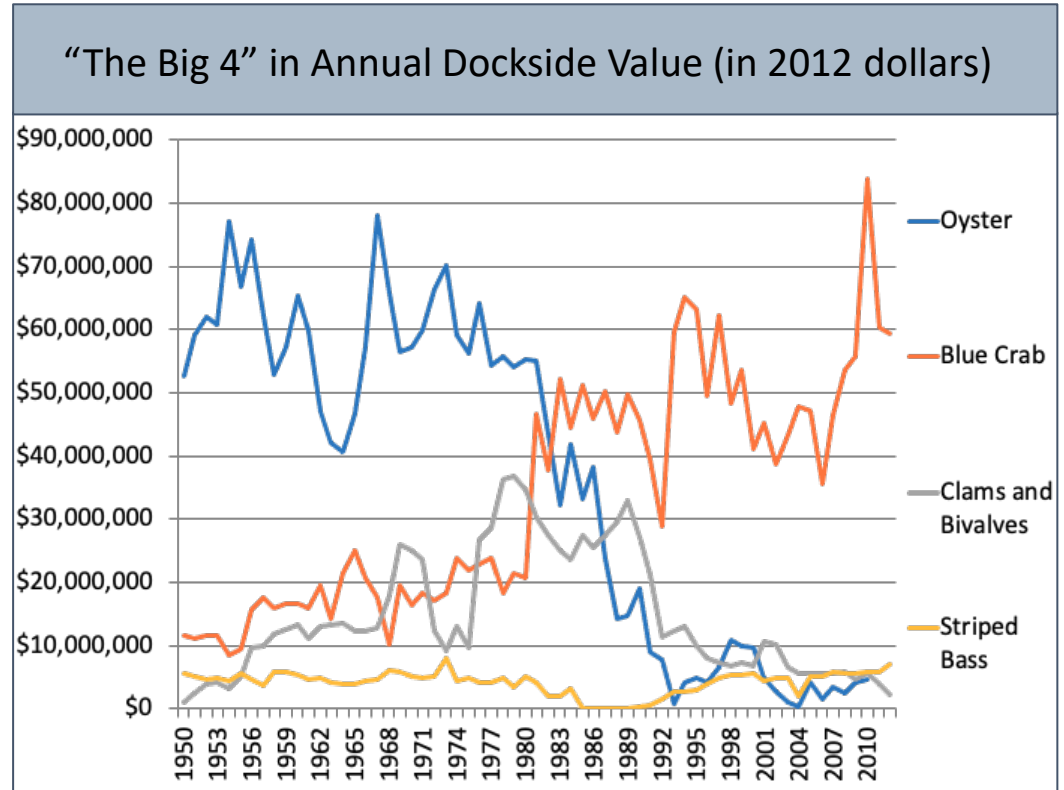
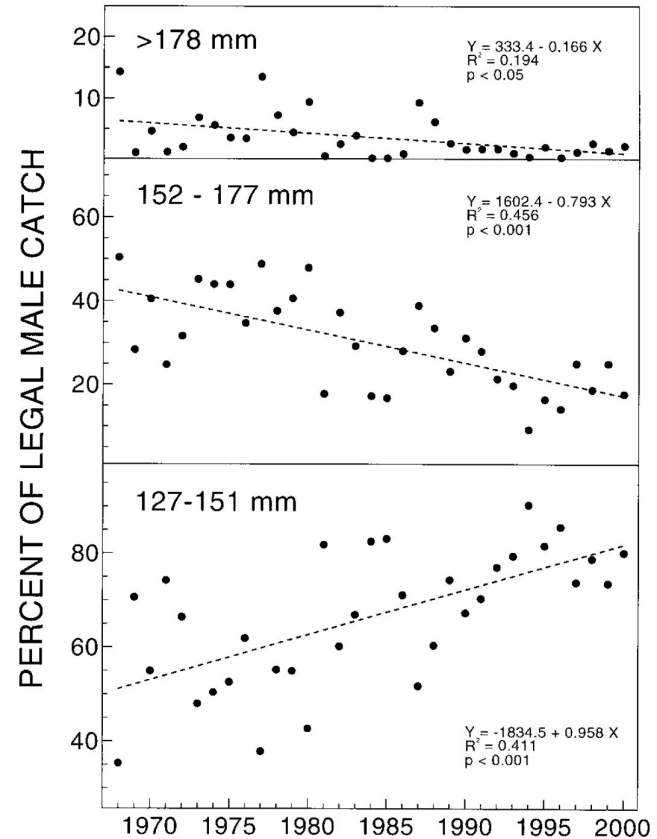


Figure: Kaitlynn Ritchie and Scott Knoche

Documenting the Changing Blue Crab Status

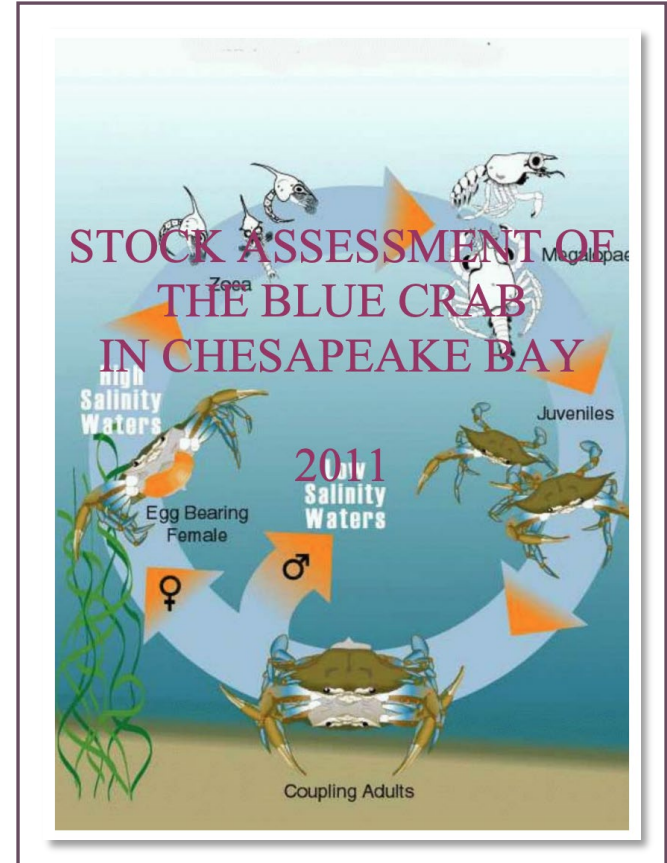
- “Decline in Size of Male Blue Crabs from 1968-2000 near Calvert Cliffs, Maryland”
- Warning Signal
- Blue Crab Crash: In 2008, NOAA disaster declared for fishery



Surveys and Management

Changes in Management:

- 2011 - Winter Dredge Survey (WDS)

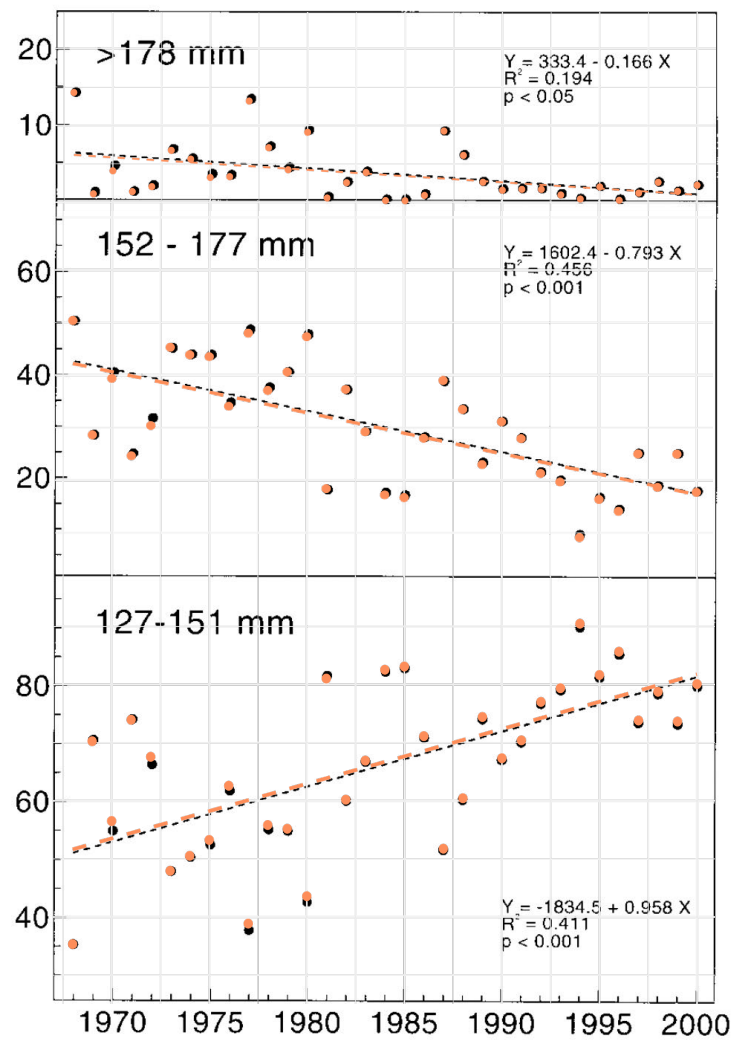


Data Analyses

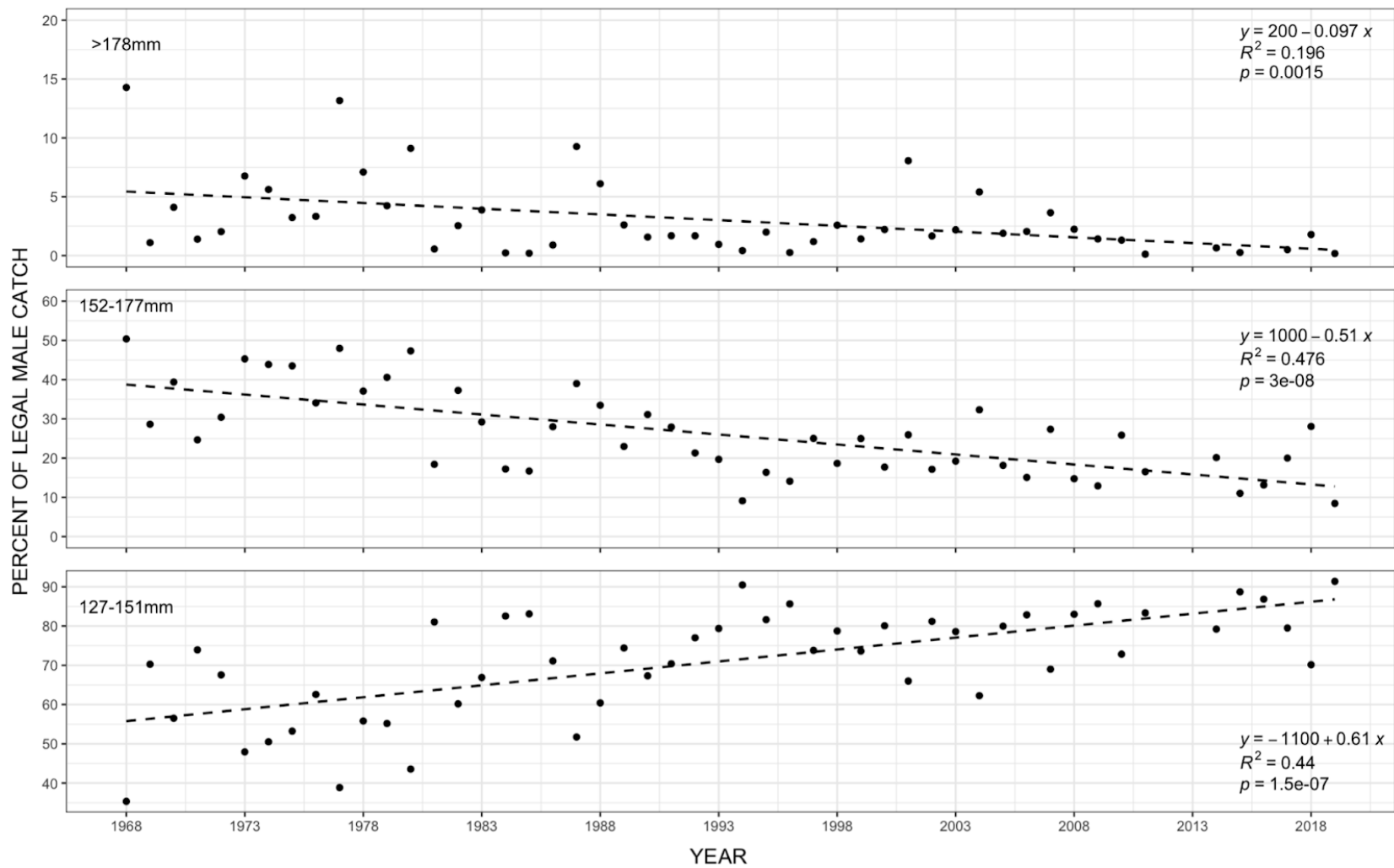
Change in Size Over Time

- **Is the abundance of large male crabs still declining?**

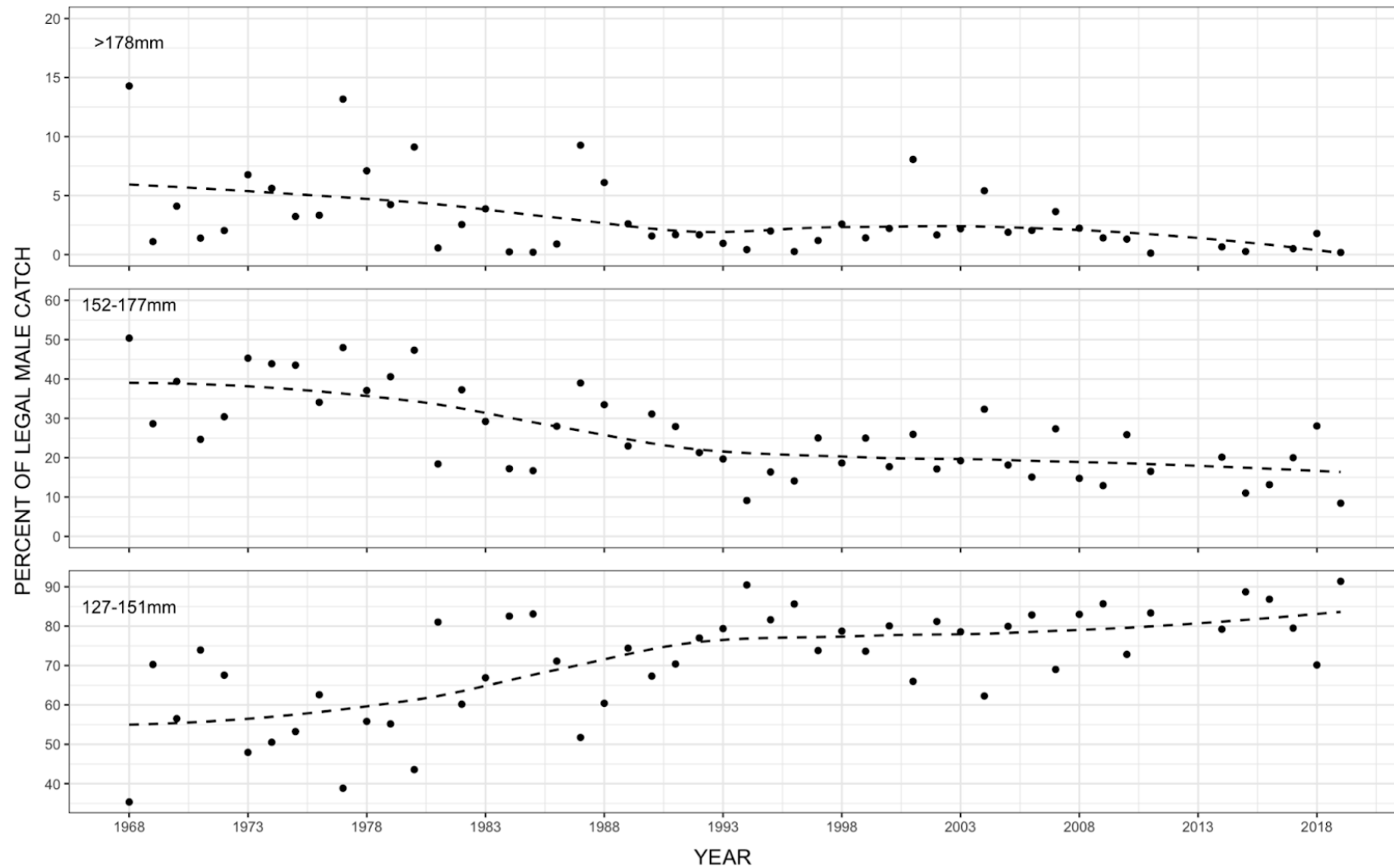
PERCENT OF LEGAL MALE CATCH



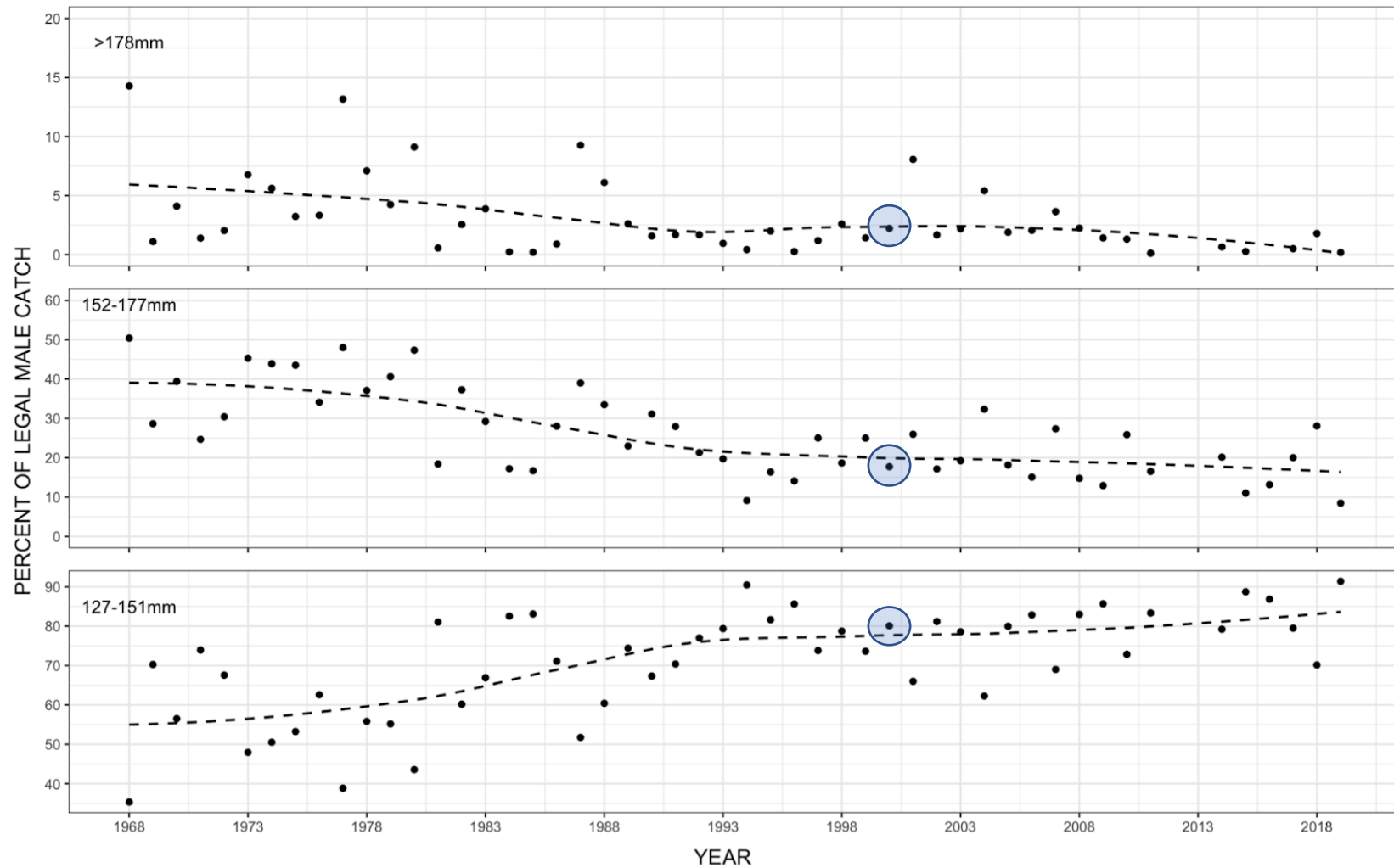
Change in Legal Male Crab Size (1968-2019)



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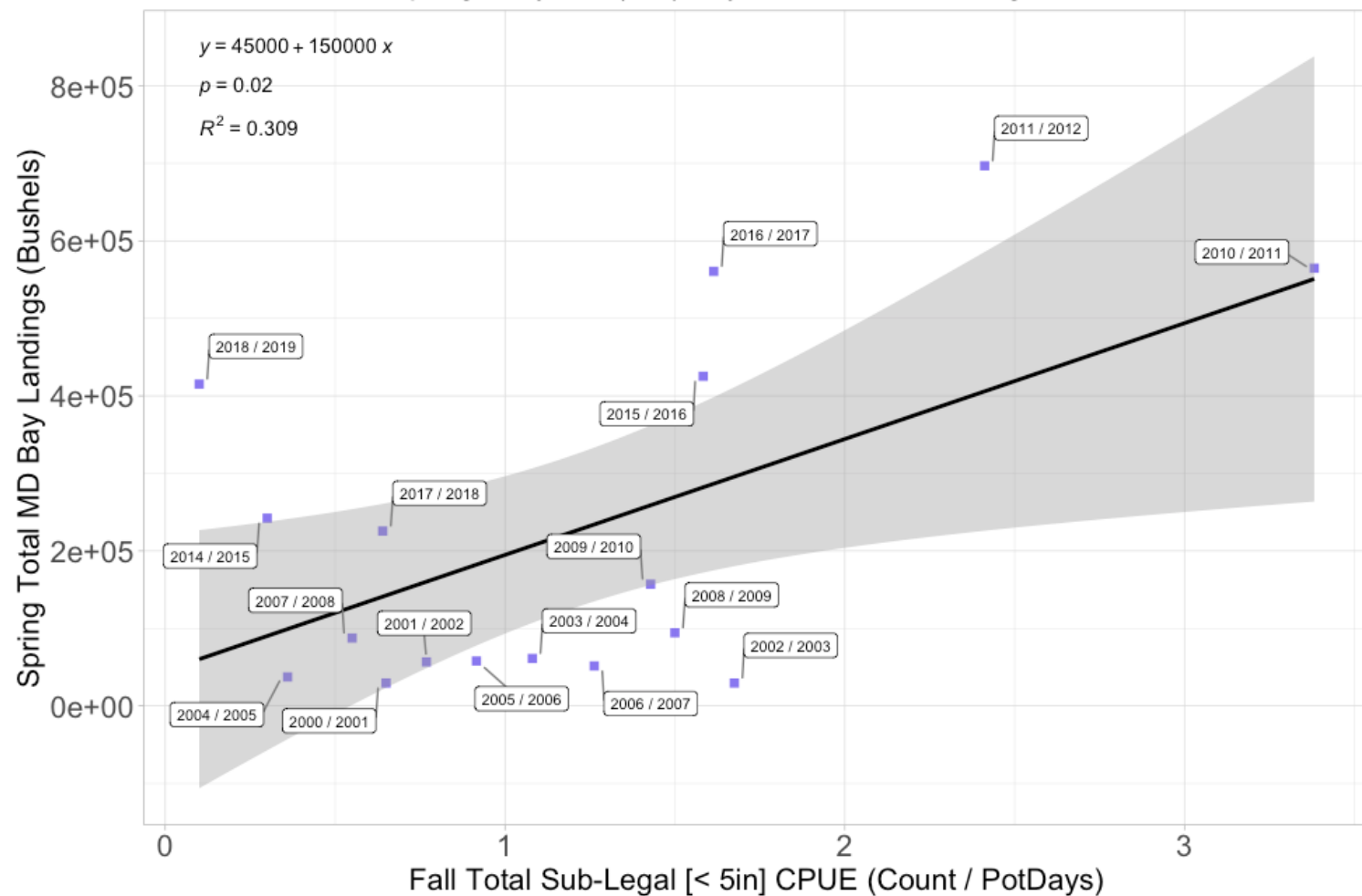


Data Analyses

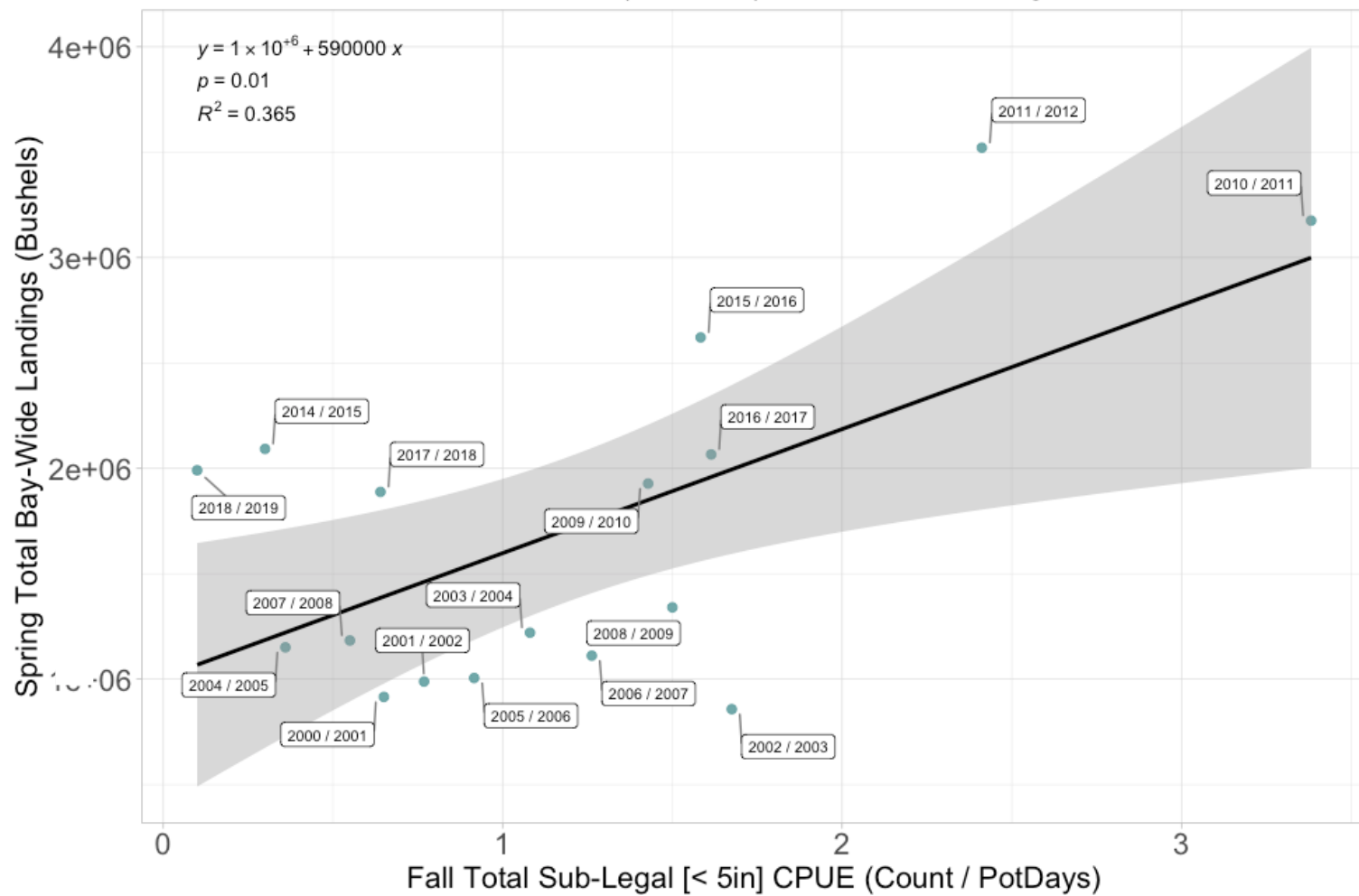
Indices & Landings Predictions

- **Can we predict blue crab commercial harvest?**

Total Fall Sub-Legal Blue Crab Catch to Total Spring Maryland (MD) Bay Commercial Landings, 2001-2019



Total Fall Sub-Legal Blue Crab Catch to
Total Annual BAY-WIDE (MD & VA) Commercial Landings, 2001-2019





Next Steps & Future Research

- Environmental Drivers
 - ❖ Temperature, Salinity, Dissolved Oxygen
- Analyses of Sponge Crab Occurrence
- Juveniles & Submerged Aquatic Vegetation
- Winter Mortality Estimates



Importance of the PEARL Long-Term Survey – A Unique Perspective

- Size decrease of crabs
- Especially important as we enter a period in history of the Chesapeake Bay
 - Water temps greater than we have ever observed before
- Provides complementary information to the Winter Dredge Survey
 - Documents the status of the active animals throughout the harvested season
 - In similar gear to what is used by commercial watermen & waterwomen
- Unique picture of health of female crabs
- Invaluable training experience

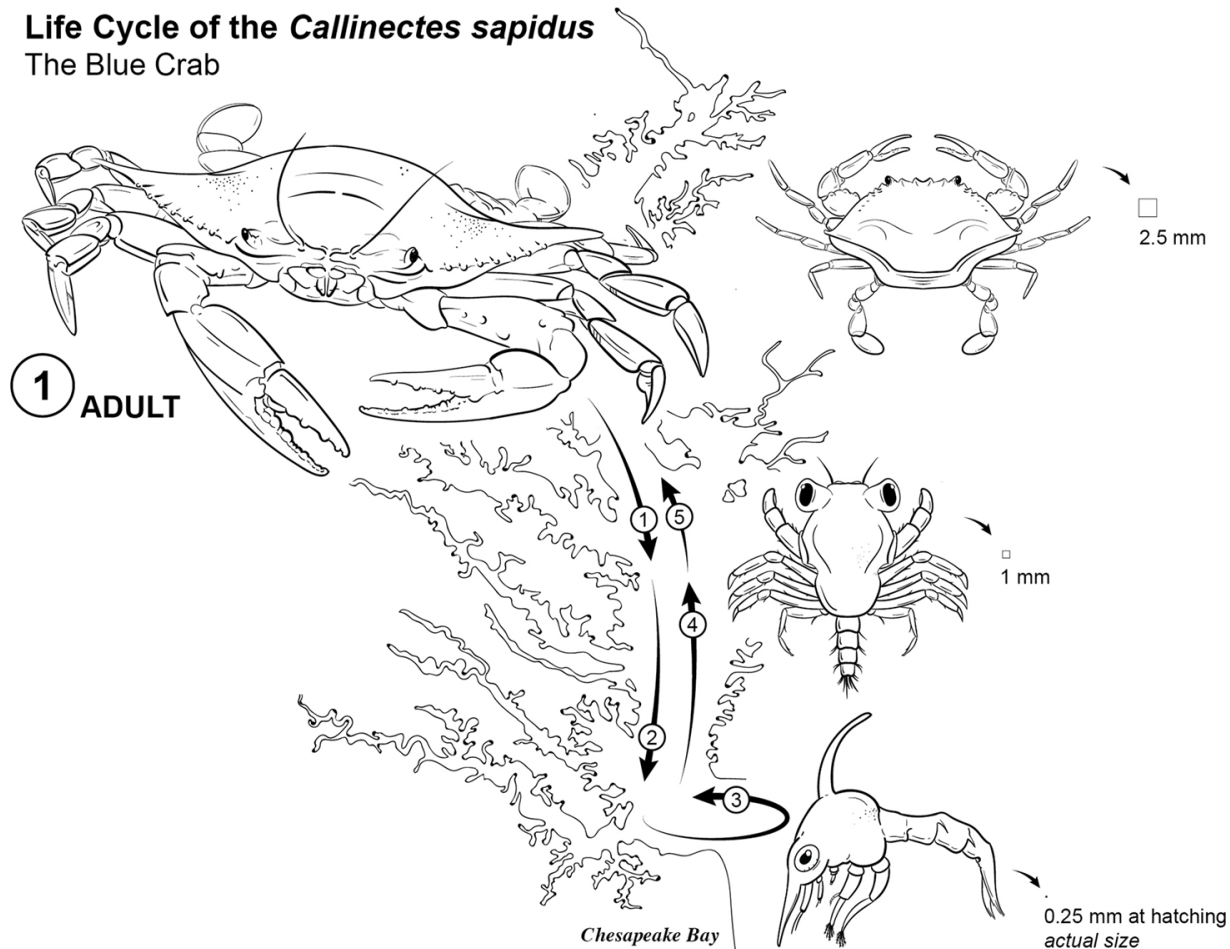
Thank You!

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Extra Slides

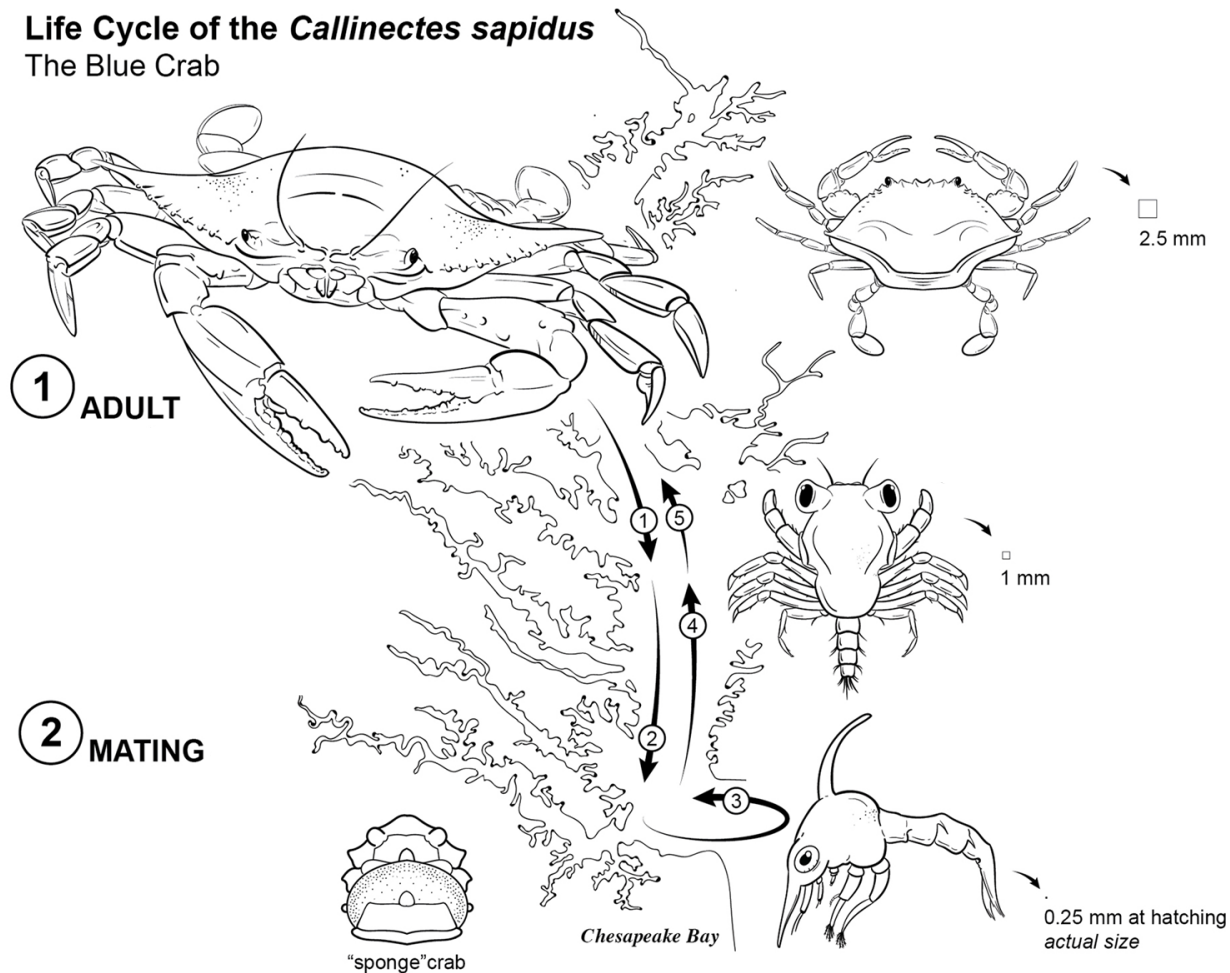


Life Cycle of the *Callinectes sapidus* The Blue Crab



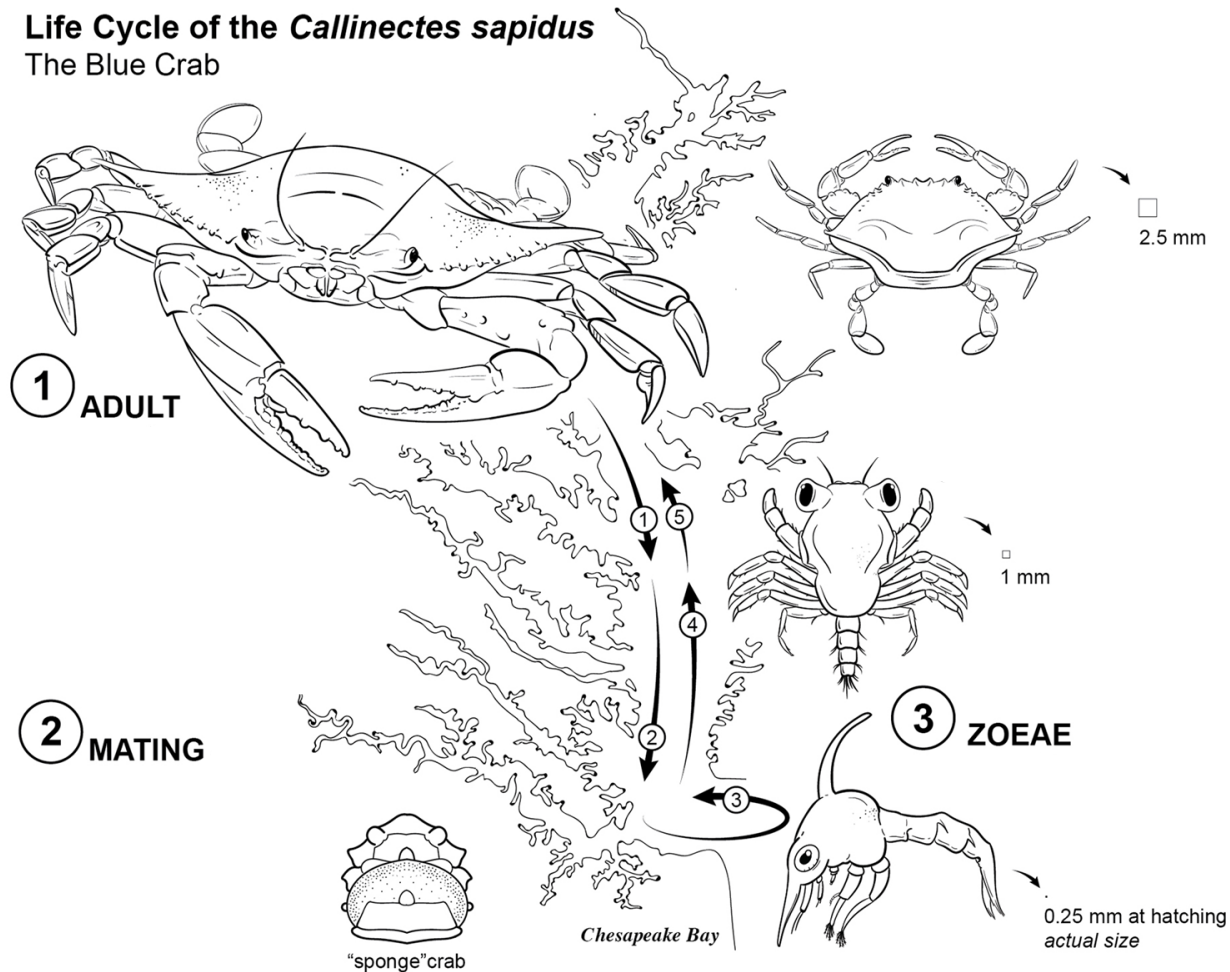


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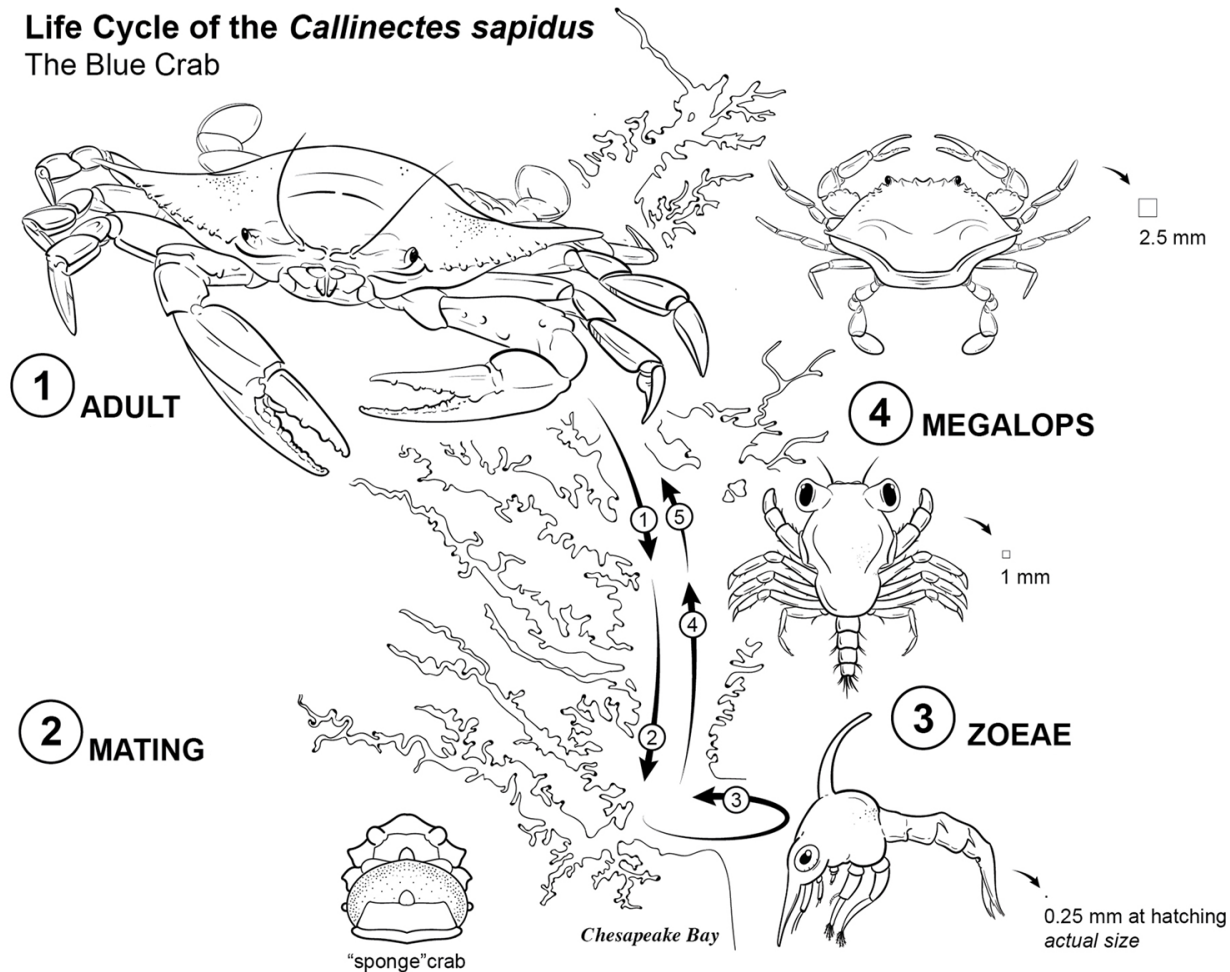


Life Cycle of the *Callinectes sapidus* The Blue Crab



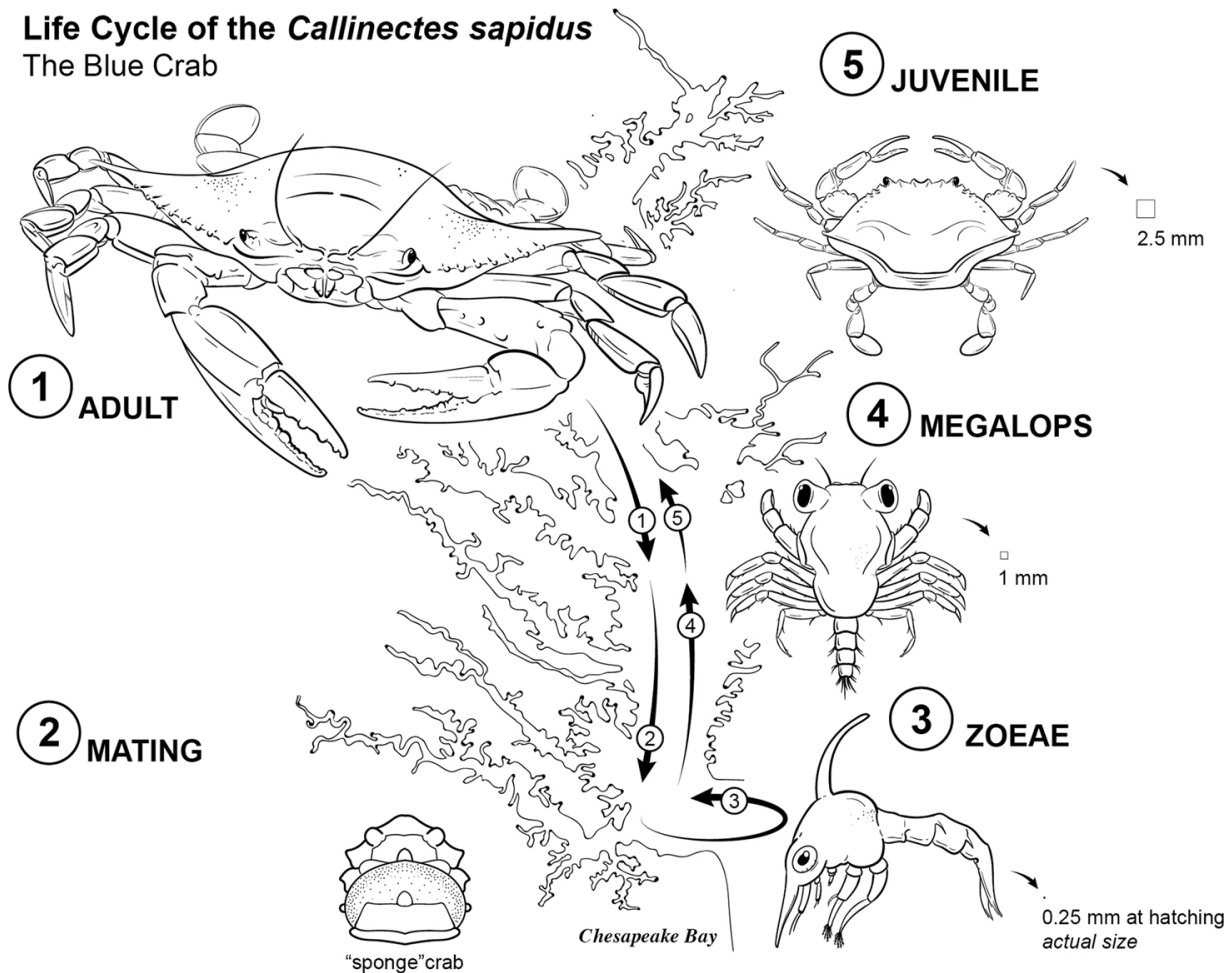


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Annual Average Atlantic Multidecadal Oscillation (AMO)
to Yearly Total Blue Crab Catch (1971-2019)

