Field Research in an Introductory Oceanography Lab

WILLIAM & MARY
VIMS
VIRGINIA INSTITUTE OF MARINE SCIENCE
SCHOOL OF MARINE SCIENCE

Thomas Nelson
COMMUNITY COLLEGE
Explore. Excel. Succeed.

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The Field *IS* our Lab

James, York,
Lynnhaven, Elizabeth
River Estuaries

Main Stem
Chesapeake Bay

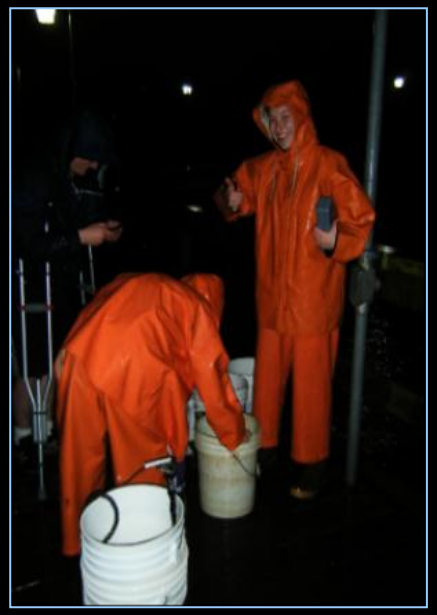
Virginia's Atlantic Coast,
MD to NC borders

Focus on Process

- Guided inquiry-based learning approach
- Equipment, methodologies and familiarization with localities
- Learn to observe!
- Ask questions and build interpretations from their direct observations
- Conduct the experiment-simple!
- Disseminate information to classmates and mentors

Student Research Projects

- Seasonal variations in the longshore current at Fort Monroe
- Amphipod abundance in Goodwin Island seagrass beds
- York River Estuary- tides and zooplankton abundance and diversity



Student Research Projects

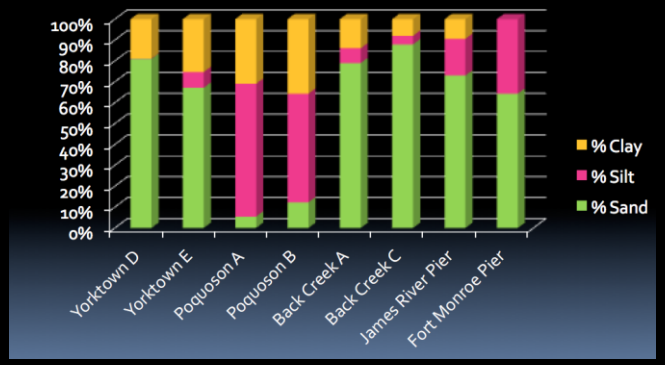
- Seasonal variations in the longshore current at Fort Monroe
- Amphipod abundance in Goodwin Island seagrass beds
- York River Estuary- tides and zooplankton abundance
- Variation in sediment composition in the James and York river estuaries

Results can be surprising

Aside from weird junk, what did we really find?

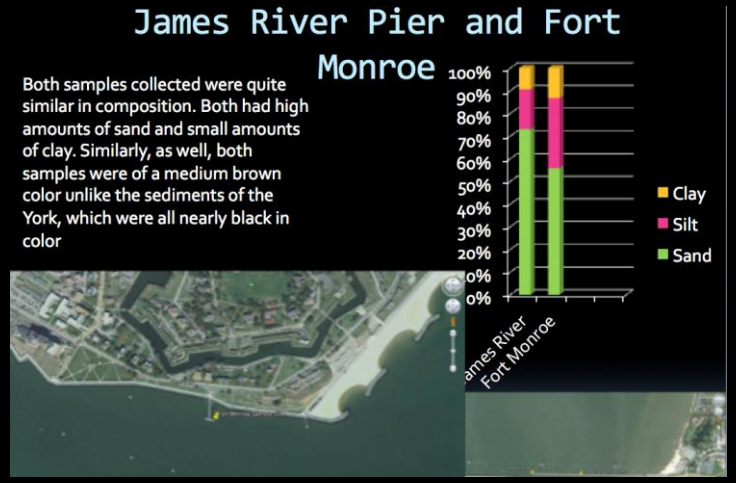
- We found varying amount of sands, clays and silts.
- And the results were actually surprising!

Results!



James River Pier and Fort Monroe

Both samples collected were quite similar in composition. Both had high amounts of sand and small amounts of clay. Similarly, as well, both samples were of a medium brown color unlike the sediments of the York, which were all nearly black in color



Unsupported hypotheses may be more interesting

Was our hypothesis supported?

- No! The York River and it's tributary of Back Creek were far more sandy than expected. Though we expected Poquoson to not be as sandy, the James River Pier and Fort Monroe were less sandy than expected.

Field work is unpredictable

Potential Problems and Mistakes

- Like any project, we ran into a few problems here and there…
- In the process of drying the silts and clays, the weighing of the Al pans was left out. Since the pans are usually about a gram we just used one gram for each.

Mistakes cont'd

- We were only able to get one sample from the James River for two reasons.
  - One: We lost a few of our bags due to wind blowing them away.
  - Two: Our sample point of half way down the pier resulted in a bottom grabber full of only one thing: live oysters and various shells.

We also had 2% of the total weight missing in the James River sample, which was likely due to shells in the sample that were probably removed by accident.

At the end of the semester…

- Actively direct a portion of their learning
  - greater investment
  - increased responsibility of course outcomes
- Good science can be simple
- Questions lead to more questions
- An unsupported hypothesis does not equal failure
- Field work is unpredictable and fun!

Student Feedback

"Just wanted to say thank you again for the field trip. As someone who doesn't have a science background or even a strong interest in science, I really ***didn't think it would be possible for me to enjoy a weekend dedicated to scientific research****, but, apparently, it is possible :)*

I had a great time, and it was awesome to be able to ***apply what we've been learning*** *in the classroom and* ***see how it's relevant****."*