The Chesapeake Bay Parasite Project

Annual Newsletter

By Monaca Noble

December 2019

In FY2019 190 people participated in the project! This included 156 volunteers who contributed 1,030 hours. The remaining people were collaborators, dock owners, staff, and interns. We couldn't do it without you - Thanks!

Due to the generous support from Collot Guerard, the Royal Bank of Canada Wealth Management office, and the Provost's Office of the Smithsonian Intuition we were able to fund and provide research experiences for three interns – Molly Cahill, Amanda Bevans, and Katlyn Fuentes. In addition, we were able to mentor and provide laboratory experience to seven high school students. We had terrific support from the citizen science intern, Dylann Middleton, and the whole citizen science team, making this project possible.

Research Accomplishments

Mud crab survey – Our teams of volunteers, staff, and interns processed 198 collectors from October 2018 through August 2019. This included 150 collectors in the summer and 48 seasonal collectors sampled between October and April.

Larval crab survey – We conduced bi-monthly plankton tows in the Rhode River from May through September 2019, to coincide with the new and full moons. Three replicate tows were taken from five sites. This was the third year of the survey. Results from 2017 showed a peak in larval crab abundance in mid-June and a secondary pulse in late July. Analysis is underway for the 2018 and 2019 data.

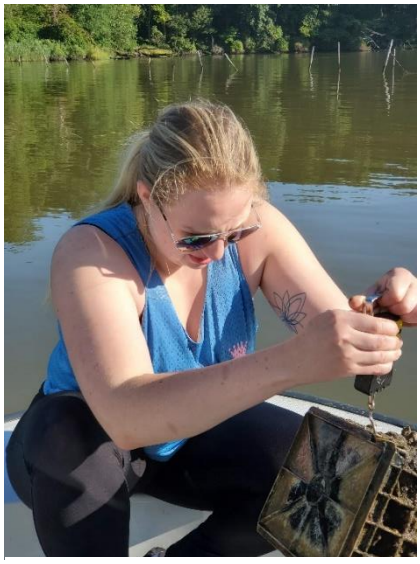
Intern Projects

Where do grass shrimp spend the winter?

To answer this question **Molly Cahill** set out ten crab collectors along the shore of the Rhode River, five in shallow water (~2ft) and five in deeper water (~3ft). A team of three people monitored the collectors weekly in 2018 from October through December, then monthly through October 2019. She found that grass shrimp packed into the offshore crab collectors during the winter months but were nearly absent there during the rest of the year – moving into shallow water as water temperatures rose. We hope to publish these results in the coming months.

Molly was an intern from September 2018 through April 2019, see her bio in the 2018 newsletter.

New Intern Projects (2019)

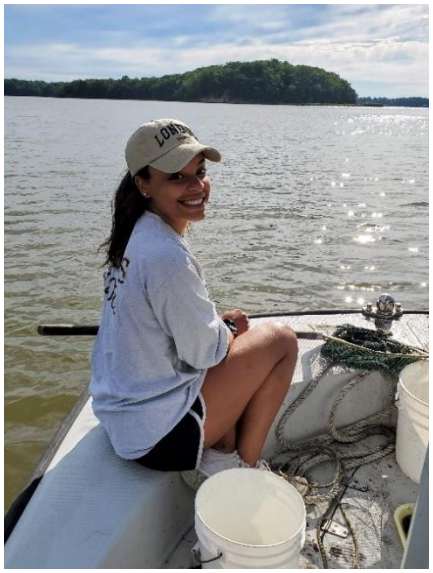


Amanda weighs a full crab collector from the Rhode River.

Amanda Bevans grew up in Columbia, MD and came to us from the University of Maryland, where she is a senior pursuing a degree in Environmental Science and Policy with a concentration in marine and coastal management. Amanda is passionate about the environment and is a talented artist; these two qualities pair together beautifully to support her career in ecology.

Do we miss more crabs when the collectors are heavily fouled?

Amanda looked at factors that might increase sorting time and the percentage of crabs missed during the initial sort, before the verification step. She tested whether sort time and missed crabs were correlated to percent cover of fouling organisms, mud level, and number of small crabs. She assessed the quality of 67 collectors, then counted the number of small and large crabs collected by the sorting team and the verification team. She found that higher levels of biofouling result in longer sort times, but not necessarily higher numbers of missed crabs. The results for mud level were similar. She did find that collectors with a large number of small crabs took longer to sort and had a higher number of missed crabs. This work helps improve our understanding of survey measurements.



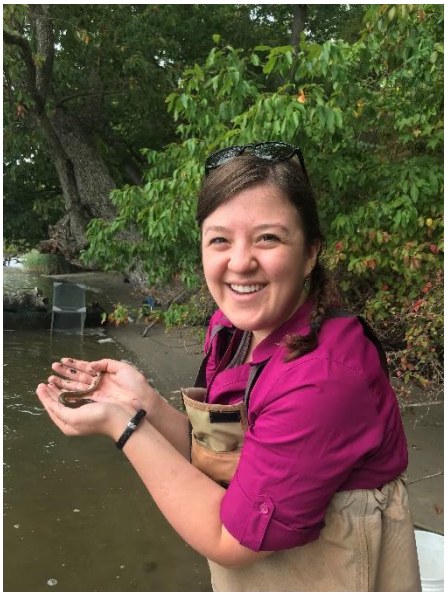
Dylann Middleton grew up in Fairfield, CT and came to us from the University of Maryland where she is a senior pursuing a degree in Environmental Science and Policy with a concentration in politics and policy. Dylann loves learning about the environment and ways to protect it and is excited to graduate this upcoming year.

Do different groups of volunteers collect crabs differently?

This past summer and fall, Dylann looked at the impact of different volunteer demographics on data collection using data from the Chesapeake Bay Parasite Project. She continued this project from where Jasmine Mirfattah, the previous citizen science intern, left off.

New to the project? Check out our project page and past newsletters at https://serc.si.edu/research/projects/mud-crabs-and-body-snatching-parasites

Dylann used the error rate, or the percentage of crabs missed while sorting, to see if demographic factors such as age, gender, SERC affiliation, and occupation had an influence on in increasing or decreasing error rates. Dylann found that most factors have no significant effect on error rates. Overall, she found volunteers produce high-quality results and performance gets a bit better with experience.



Katlyn Fuentes grew up in the Pacific Northwest and loves cool, wet weather. She recently graduated from the University of Washington in Seattle with a bachelor's degree in Aquatic and Fishery Sciences. She has a passion for fishes and an infectious positive attitude.

What is the total catch ratio of males and females? Is one sex more likely to be parasitized than another?

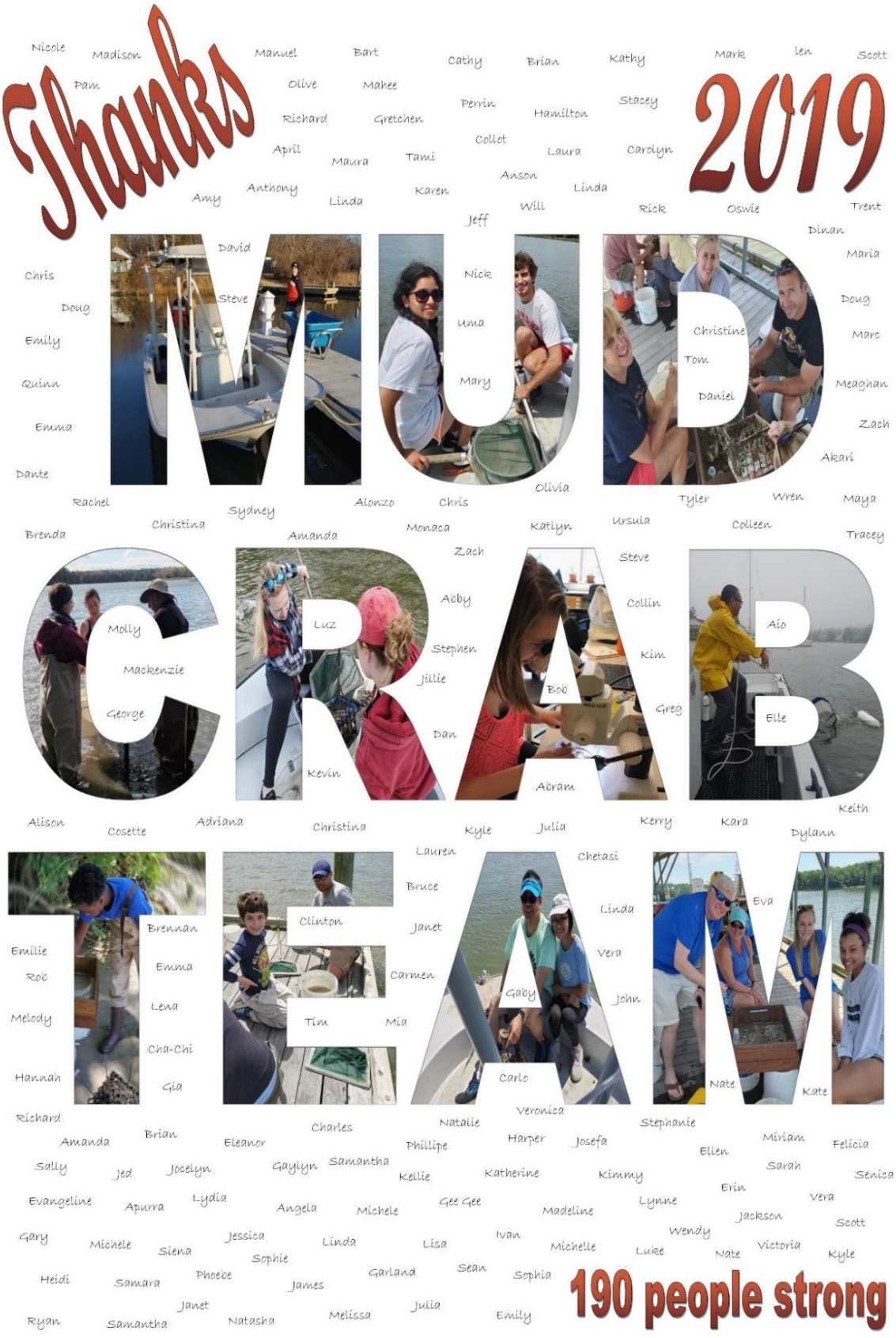
Katlyn looked at all of the data collected from 2004 through 2017 – a total of 158,594 crabs. She found significantly more females (53%) than males (47%). She then looked at parasitized crabs to see if one sex was more likely to be infected. She found no significant difference in infection rates between males and females, which had a similar level (percent) infected. Her initial analysis lead to several more questions that we'll explore as we more forward with our analysis.

Amanda and Katlyn were supported through a generous donation from Collot Guerard in honor of her husband, William Brewer. Mr. Brewer was a volunteer in our lab in 2015 and 2016. Dylann was supported through the National Science Foundation's Research Experiences for Undergraduates (REU) program. Molly Cahill has supported by the Provost's Office of the Smithsonian Intuition.

What's planned for 2020

Publications! We are working on three papers that we hope to finish in 2020. One focuses on our methods and the development of our protocol. We are working on a paper examining the winter habitat of grass shrimp, and finally we hope to finish a paper using the historic dataset in collaboration with Dr. Amy Fowler and PhD student Darby Pochtar, each at the George Mason University.

Experiments! We have some project ideas that we believe are well suited to high school researchers working toward their high school internship or senior thesis projects. If resources and time allow, we hope to begin some experiments in July.


Thanks
2019
MUD
CRAB
TEAM
190 people strong
Nicole
Madison
Manuel
Bart
Cathy
Brian
Kathy
Mark
len
Scott
Pam
Olive
Mahee
Perrin
Hamilton
Stacey
Richard
Gretchen
Collot
April
Maura
Tami
Laura
Carolyn
Anson
Amy
Anthony
Linda
Karen
Linda
Will
Rick
Oswie
Trent
Jeff
Dinan
David
Maria
Chris
Nick
Doug
Steve
Uma
Christine
Doug
Emily
Tom
Marc
Mary
Quinn
Daniel
Meaghan
Emma
Zach
Dante
Akari
Olivia
Rachel
Sydney
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Tyler
Wren
Maya
Brenda
Christina
Amanda
Monaca
Katlyn
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Cosette
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Jessica
Linda
Lisa
Ivan
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Wendy
Victoria
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