

Luke Hamel

Graduation Year: Sophomore

College: Science

Major(s): Environmental Sciences and Psychology

Minors(s): NA

Scholar Group Membership: Sorin Scholars

Did you received other funding for this project?: No

Could you have completed this project without CUSE funding? Yes

Project Title: Benthic Marine Organism Research

Project Location: Smithsonian Marine Research Station, in Fort Pierce, FL

Project Type: Research Assistantship

Why did you undertake this project/experience? Deepen your knowledge of a topic or issue, Research/experience necessary for senior thesis or capstone project, Prepare for graduate school (MA or PhD), Prepare for national fellowships, Career discernment and/or preparation

Did your funded experience help you:

[Deepen your understanding of your coursework or field of study]: Yes

[Discern your interests and post-bac goals]: Very Much

[Become confident in your ability to set and achieve your goals]: Very Much

[Gain a more nuanced view of local, national, or global communities]: Yes

[Improve your written and verbal communications skills]:A Little

Tell us about your experience.

While at the Smithsonian Marine Research Station, I assisted with several projects. One of these projects consisted of laboratory work, in which I used a microscope to analyze benthic invertebrate samples from the sediment of various locations in the Indian River Lagoon (IRL). This inspection of which invertebrate species are present is being used to see how changing conditions in the lagoon (temperature, salinity, pH, etc.) affect species' presence and numbers. As these invertebrates are largely sessile and forced to adapt to their surroundings, by looking at this data we can tell how the conditions of the lagoon may affect the overall well-being of other species and the ecosystem as a whole. Another project I assisted with examined various coral species in a controlled experiment, and aimed to explore the effects of various threats to coral health such as different types of coral disease. Finally, I was able to join several marine scientists out in the field, as we examined selective foraging behavior of clams and oysters by traveling to various locations on the IRL and analyzing the feces and pseudofeces of these organisms. This work was looking at, in part, the sequestering ability of these clams and oysters of various nutrients, as well as the implications of their foraging behavior on survival in the event of an algal bloom.

My goal was to examine how anthropogenic influences to the environment as well as changes in climate affect ecosystem health in the Indian River Lagoon, and it was very interesting to be

able to partake in various projects, all of which contributed uniquely to bettering my understand of the issue. I learned that nutrient runoff from municipal, agricultural, and industrial sources as well as water flow diversion are having serious effects on many species' populations and well-being within the IRL.

Describe the impact this project had, both on you as a student-scholar and on the people you worked with.

My project had an incredibly positive impact on me. For one, it allowed me to pursue a topic that I was very interested in, and it gave me a sense of pride in myself and in my school because I was witnessing my knowledge and passions coming together. I had a goal to research marine ecosystems and the effects that they face due to human influence, and through CUSE's assistance I was able to take my love of learning outside of the classroom. It is truly an incredibly empowering experience to watch yourself develop an idea and then see that idea come to life. Furthermore, this project allowed me to see the sides of marine ecology that I otherwise would not have seen. Before I left for my trip, I had a pretty idealized notion of what the life of a marine biologist was like. While I had an amazing experience that will help me later in my career, I also discovered the parts of the work that are not as intriguing to me, and to me this makes the trip an even more worthwhile experience.

I think that my assistance was greatly appreciated by the station and its staff, as I was able to help with a multitude of projects and lessen the workload for the scientists. I also was able to act as a link between the station and Notre Dame, connecting the work of the researchers in Florida with that of our university's faculty.

Describe how this experience is connected to your plans as a student or future professional.

I found that my project provided a nice foundation from which I can build upon. By this I mean that I was exposed to information that is important to know when studying the effects of human influence and climate change on food web stability (a topic that I hope to investigate). I learned about the effects of agriculture and industry on water quality and ecosystem health, and how cascading effects can have very negative effects on many aspects of the surrounding marine and estuarine environments. Moving forward, I hope to use the knowledge I gained from this experience when I am formulating a senior thesis that focuses on the effects of human behavior and climate change on both human and animal health, resources, and population stability. This project also gave me ideas on which organizations to connect with, and which specific research questions to explore as I move towards a thesis. Finally, while talking to researchers at the station, I learned a great deal about the application process to graduate school, and what the life of a marine biologist is truly like. Both of these pieces of information are so important for me to have as I consider my future career.

What advice would you give other students who are planning to pursue similar projects?

Through CUSE's help (in terms of both mentorship and financial assistance), I was able to complete an extremely informative and rewarding project in an area of study that fascinates me. My advice to students would be to talk with CUSE staff before ever having the chance to

