

Coastal Ocean Institute
Student Research Proposal Award
Research Report
November, 2011

Dear Dr. Chris Reddy,

I would like to express my appreciation for the research support provided by the Coastal Ocean Institute. The COI Student Research Award enabled me to take full advantage of a unique collaborative research opportunity that will profoundly shape the outcome of my thesis on environmental controls on coral reef calcification rates.

My thesis research investigates the response of coral reefs to changes in the environment. A large part of this research involves using carbonate chemistry budgets of reef environments to estimate community calcification rates. Because much of my thesis work does not fall cleanly within my advisor's specific area of expertise, I have sought to supplement his support with the resources found at WHOI by forming a scientifically diverse committee, sharing research costs with collaborators, and applying to the COI Student Research Award. In granting me the Student Research Award the COI provided the critical financial support necessary to execute an important portion of my research.

The COI Student Research Award was instrumental in facilitating my field work in Puerto Rico in August 2011 as well as the development of a collaborative relationship with Dr. Chris Langdon from the University of Miami. Because Dr. Langdon has extensive experience in measuring community calcification rates in coral reef environments, he is able to provide me with invaluable guidance in my research endeavors. With the support of COI, I joined Dr. Langdon's team in Aug 2011 for a week long field expedition in Puerto Rico. This was an ideal situation, as Dr. Langdon and his colleagues have done extensive monitoring work at the Puerto Rico Field site, the Ocean Acidification Test Bed. Their ongoing research provides a plethora of data to contextualize the brief field studies I conduct there. In addition to sharing sampling equipment and instrumentation with me, this team generously provided me with assistance in the field (boat drivers and swimmers) and scientific advice. This was clearly an excellent opportunity for collaboration and for advancing my thesis work. The critical element that enabled me to take this opportunity was the generous support of WHOI's Coastal Ocean Institute, which provided me with funds needed for travel to Puerto Rico, room and board, shipping, sample analysis, and field equipment.

As a result of this fortified collaborative relationship, Dr. Langdon now serves on my thesis committee and regularly provides me with scientific advice. Additionally, I will join Dr. Langdon again in Puerto Rico, for a follow-up study at the same site. This will enable me to make seasonal comparisons at one site. I also hope to join Dr. Langdon for field expeditions in Florida during two seasons in 2012.

With regards to scientific results, analysis of data from the August trip to Puerto Rico is underway. Initial results show that the calcification rates that I have determined are of similar magnitude to the rates measured by Dr. Langdon at the same location at an earlier date by a different method. It is reassuring that these methods agree, because each method has its own suite of uncertainties. These rates will be compared to local environmental variations in order to explore the relationships between environmental

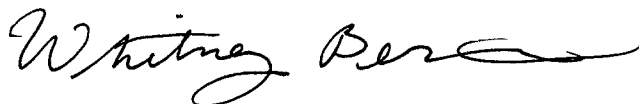
factors and community calcification rates. These calcification rates also provide information about the state of Puerto Rican reefs as compared to reefs in differing environments around the globe.

My work in Puerto Rico will help me build a better understanding of controlling factors for calcification which will inform predictions on how reefs will respond to environmental change. The COI funds have been instrumental in enabling me to pursue these research endeavors.

Thank you for your support.

Sincerely,

Whitney Bernstein

A handwritten signature in black ink, reading "Whitney Bernstein". The signature is fluid and cursive, with the first name "Whitney" being more prominent and the last name "Bernstein" following in a similar style.

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