

**Title of Project:** Ecological and Environmental Drivers of Lionfish on Invaded Coral Reefs in the U.S. Virgin Islands

**Principal/Co-principal Investigator(s), e-mail and affiliations and students:**

Bernard Castillo II, Ph.D. (PI)  
College of Science and Mathematics  
University of the Virgin Islands  
bcastil@uvi.edu

Richard Nemeth, Ph.D. (Co-PI)  
Center for Marine and Environmental Studies  
University of the Virgin Islands  
rnemeth@uvi.edu

Stephanie Green, Ph.D. (Co-PI)  
Center for Ocean Solutions  
Stanford University  
stephanie.green@stanford.edu

Lad Akins (Co-PI)  
REEF Foundation  
Lad@reef.org

Students (with their majors):

1. Deborah Elizabeth Smith (MMES)

**Project Period:** July 2016-in progress

**Objectives of VI-EPSCoR funded project (one or two sentences):**

The project seeks to answer two key questions:

1. Do patterns of lionfish movement relate to environmental or ecological variables?
2. Does lionfish removal affect patterns of re-colonization (i.e. adult movement and recruitment)?

**Activities during this Project Period:**

For this progress report, we would like to highlight accomplishments from July 2016-present, namely:

1. *Contracts set-up:* All accounts (grant, accounting, etc.) contracts for the Co-PIs, contractors and graduate students were approved.
2. *Funding for Graduate Student:* Deborah Elizabeth Smith, a second year Master's of Marine and Environmental Studies graduate student, has decided to join our group and funding were made available for her. She moved to St. Croix this past May 2017 and started her work on her thesis.
3. *Graduate Student Thesis Proposal:* Elizabeth has refined the project proposal and tailored it for her MES 595 (Independent Research). She successfully defended her thesis proposal

this past August 2017. She will be continuing with her work in St. Croix.

4. *Study Sites.* Twenty six (26) patch reefs were identified for the study at the Buck Island Reef National Monument (Image 1). The patch reefs were marked underwater fish lines and styrofoam balls or PVC pipes (Image 2).
5. *Native Fish and Lionfish Surveys:* One of the co-PIs (Stephanie Green) came to St. Croix to provide training on native fish and lionfish surveys. Additional divers, Marcia Taylor (CMES) and Kynoch Reale-Munroe (contractor) were trained to conduct surveys (Image 3). Volunteers divers from St. Croix were also trained and recruited to assist in the surveys. The native fish and lionfish surveys were successfully completed in July 2016. Fifteen (15) lionfish were found from the study patch reefs.
6. *Study Presentations.* We presented an overview of our project in St. Croix to:
  - i. James Madison University summer students (June 15, 2017) in UVI RT Park
  - ii. National Park Service (June 22, 2017) Thursday Science talk series
  - iii. CRABBS Dive Club (July 11, 2017) monthly meeting

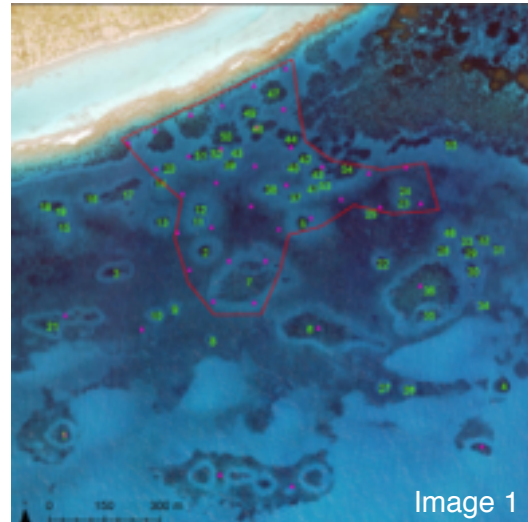


Image 1



Image 2

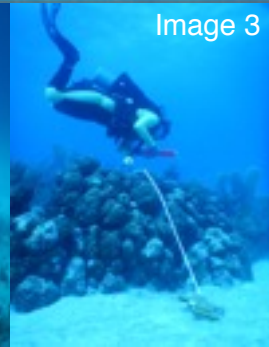


Image 3

### **Major findings/ Accomplishments:**

We have successfully completed the first phase of our study, which was native fish and lionfish surveys. We were able to locate 15 lionfish from the 26 patches.

**Outputs** (Please also attach any supporting documentation such as grant proposal cover page, reprints of papers and conference abstracts):

None to report.

### **Planned research activities for next period (6 months):**

We have scheduled our lionfish tagging in September 2017. We will return to our dive sites and locate the lionfish then surgically install a transmitter. The damage caused by hurricanes Irma and Maria to both St. Croix and St. Thomas has resulted in a halt to our work. Our group will convene via video meeting and discuss the next plan of action.

**Planned outputs** (i.e. grant proposals, manuscripts or presentations; include proposed dates, funding agency, journal or conference name if applicable):

We are seeking funding opportunities to apply for additional funding for the study.

### **Difficulties encountered implementing your incubator project:**

Most of the issues we encountered were delays in payments and contracts. We were unable to proceed with our work as of September 2017 due to the damages caused by hurricanes Irma and Maria.

**Photos:** Please include at 2 -5 photos of your research activities