# NOAA CENTER FOR COASTAL AND MARINE ECOSYSTEMS (CCME)

Semi-Annual Performance Report for
Award Number NA16SEC4810009
Reporting Period: September 1, 2018 – February 28, 2019


**Lead Institution - Florida A&M University**

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Bethune-Cookman University
*Dr. Hyun Jung Cho (Institutional PI)*

California State University Monterey Bay
*Dr. Corey Garza (Institutional PI)*

Jackson State University
*Dr. Timothy Turner (Institutional PI)*

Texas A&M University, Corpus Christi
*Dr. Richard McLaughlin (Institutional PI)*

University of Texas, Rio Grande Valley
*Dr. David Hicks (Institutional PI)*

Current tools in development: 5

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# Acronyms and Abbreviations

FAMU: Florida A&M University

B-CU: Bethune-Cookman University

CSUMB: California State University Monterey Bay

JSU: Jackson State University

TAMUCC: Texas A&M University-Corpus Christi

UTRGV: University of Texas at Rio Grande Valley

CCME: Center for Coastal Marine Ecosystems

CMT: Center Management Team

CSC: Cooperative Science Center

CMT: Center Management Team

CWCC: Center Wide Core Competency

EPP: Educational Partnership Program

HBCU: Historically Black Colleges and Universities

MSI: Minority Serving Institution

NERTO: NOAA Experiential Research & Training Opportunities

NOAA: National Oceanic and Atmospheric Administration

NOS: NOAA's National Ocean Service

OAR: Oceanic and Atmospheric Research

NMFS: National Marine Fisheries Service

Degree Level: T: Transfer, B: First Time in College (FTIC), M: Master's, D: Doctoral

# NOAA Cooperative Science Center Project Performance Report

## I. Executive Summary

This report covers the accomplishments for the reporting period September 1, 2018 – February 28, 2019 for the National Oceanic and Atmospheric Administration's Center for Coastal and Marine Ecosystems (NOAA CCME). During this reporting period NOAA CCME directly supported a total of 68 students, 88% from underrepresented minority communities, across three cohorts.

**CCME Objective 1. Education and Training (*Specific Objectives 1a and 1d, Special Award Condition V*)**

- CCME has graduated nine students (1 Transfer, 5 B.S. and 3 M.S.). During the reporting period CCME Graduate Scholar Anthony Lima graduated from the CCME UTRGV Master's program and entered the CCME TAMUCC Doctoral program.
- CCME Graduate Scholar Mallory Brooks has been hired by NOAA the Southeast Regional Office as the Fishery Ecosystem Plan (FEP)Coordinator at Caribbean Fishery Management Council as a result of her NERTO. This is a non-Federal contract position.
- CCME currently has a total of 63 active graduate and undergraduate scholars (5 community college transfers, 23 first time in college undergraduates, 24 Master's students, and 11 PhD students).
- Five CCME Graduate Scholar NERTOs have been completed with NOAA researchers at AOML, SEFSC, the NMPAC and a National Marine Sanctuary (Fall 2018, Spring 2019).

*Table 1: Number of Funded Students – Fall 2018 - March 2019*

| Institution | Transfer | Undergraduate | Master's | Doctoral | TOTALS |
|---|---|---|---|---|---|
| Cohort 1 | | | | | |
| FAMU | 0 | 7 | 3 | 0 | 10 |
| B-CU | - | - | 3 | - | 3 |

| | | | | | |
|---|---|---|---|---|---|
| CSUMB | - | 3 | 3 | - | 6 |
| JSU | 0 | 5 | 1 | 1 | 7 |
| TAMU-CC | - | - | 1 | 4 | 5 |
| UTRGV | - | 0 | 4 | - | 6 |
| Cohort 2 | | | | | |
| FAMU | 2 | - | 1 | 4 | 7 |
| B-CU | - | - | 1 | - | 1 |
| CSUMB | - | - | - | - | 0 |
| JSU | 1 | - | - | - | 1 |
| TAMU-CC | - | - | - | 2 | 2 |
| UTRGV | - | 0 | 2 | - | 2 |
| Cohort 3 | | | | | |
| FAMU | 2 | - | 1 | 0 | 1 |
| B-CU | - | - | - | - | 0 |
| CSUMB | - | 3 | 2 | - | 5 |
| JSU | 0 | 1 | 0 | - | 1 |
| TAMU-CC | - | - | 0 | 1 | 0 |
| UTRGV | - | 3 | 3 | - | 6 |
| TOTAL Active | 5 | 22 | 25 | 12 | **64** |

| | | | | | |
|---|---|---|---|---|---|
| Graduated | 1 | 5 | 3 | - | 9 |

**CCME Objective 2. Scientific Research (*Specific Objectives 2a-2c*)**

- CCME Research focuses on the areas of Coastal Resilience, Coastal Intelligence and Place-Based Conservation. Examples of completed NERTOs in these three focal areas include:
    - Coastal Resilience – NERTO and Thesis Defense Completed: CCME Scholar Cristina Madrid, *Resilient Communities: Local Disaster Coordination in the Rio Grande Valley*
      NERTO mentor: Kim Penn, OCM and Dr. Melissa Kenney, University of Maryland ESSIC/NOAA CICS
    - Coastal Intelligence – NERTO Completed: CCME Scholar Nigel Lascelles, *Chemical Characterization of Microplastics Polymers for CSC Graduate Student*
      NERTO mentor: Dr. Ashok Deshpande, Sandy Hook, NMFS/Northeast Fisheries Science Center
    - Place-Based Conservation – NERTO and Thesis Defense Completed: CCME Scholar Anthony Lima,
      *Inter-agency Cooperation, Policy, and Management of the Gulf of Mexico Fishery*
      NERTO mentor: Dr. Scott Large, NMFS/ Northeast Fisheries Science Center

**CCME Objective 3. CSC Administration**

- CCME Science Advisory Council and Community Stakeholder Advisory Board members have enhanced participation in CCME activities through attendance of CCME monthly calls (Spring 2019).
- NOAA CCME conducted a site visit of CCME Partner Institution B-CU on February 20, 2019

## Looking to Year 3

**CCME Objective 1. Recruitment (See Specific Objective 1a)**

- In order to meet the established Year 3 recruitment goals NOAA CCME will recruit 9 Community College Transfer students, 11 Master's students, and 2 PhD students – applications are currently under review.
- Recruitment efforts included a CCME booth at ASLO resulted in the collection of information for 30 potential CCME students.

**CCME Objective 1. Student Training (See Specific Objectives 1a, 1c and 1d)**

- NOAA CCME Expects the completion of 17 additional NERTOs by the end of Year 3.
- The second CCME CWCC will take place from May 19-24, 2019 in Brownsville and South Padre Island, TX.

- 19 CCME Scholars are expected to graduate within Year 3

**CCME Objective 2. Research**

- CCME faculty and staff participated in two CSC Special Sessions titled *Linking Natural and Social Science to Understand Societal Impacts of Research* and *A STEM learning Community of Practice Network* as part of the American Meteorological Society (AMS) Meeting to be held in January of 2019.
- 16 CCME Graduate Scholars are expected to complete their NERTO requirements by the end of Year 3.

- CCME faculty and staff have submitted a CSC Special Session titled *Education Partnerships in Coastal and Marine Science* as part of the Coastal and Estuarine Research Federation (CERF) Conference to be held in November of 2019.

**CCME Objective 3. CSC Administration**

- NOAA CCME Plans to hold its third annual meeting at the Southwest Fisheries Science Center in La Jolla, CA from April 10-12, 2019.
- NOAA CCME launched the online portion of the CWCC to occur at San Padre Island, TX May 19-24, 2019.

*Key Personnel*

- The NOAA CCME Data, Communication, and Information Manager has now joined the team. Mr. Kris Suchdeve joins us from Florida State University's Center for Ocean-Atmospheric Prediction studies where he served as the webmaster and dataset administrator.
- NOAA CCME Key Personnel hires are now complete.

## NOAA CCME Focal Area Participants

### Leadership

Center Director: Larry Robinson, Ph.D.
Associate Director: Michael Abazinge, Ph.D.
Assistant Director: Sharmini Pitter, Ph.D.
Distinguished Research Scientist: Steve Morey, Ph.D.
Data, Communication, and Information Manager: Kris Suchdeve

### Institutional Principal Investigators

CCME B-CU: J. Cho, Ph.D.
CCME CSUMB: Corey Garza, Ph.D.
CCME JSU: Tim Turner, Ph.D.
CCME TAMUCC: Richard McLaughlin, Ph.D.
CCME UTRGV: David Hicks, Ph.D.

### Committee Leadership

Education Expert: Bernadette Kelley, Ph.D.
Social Science Lead: Phyllis Gray-Ray, Ph.D.
Coastal Intelligence Co-Chairs: Richard Long, Ph.D.; Paul Montagna, Ph.D.
Coastal Resilience Co-Chairs: Owen Temby, Ph.D.; David Yoskowitz, Ph.D.
Place-Based Conservation Co-Chairs: J. Cho, Ph.D.; Corey Garza, Ph.D.

### Focal Area Participants – Faculty

*Coastal Intelligence:*
Elijah Johnson, Ph.D., Florida A&M University
Michael Abazinge, Ph.D., Florida A&M University
James C. Gibeaut, Ph.D., Texas A&M University at Corpus Christi
Hongmei Chi, Ph.D., Florida A&M University
J. Cho, Ph.D., Bethune-Cookman University
Emily Jones, Ph.D., Florida A&M University
Timothy Turner, Ph.D., Jackson State University
Paul Tchounwou, Ph.D., Jackson State University
Charles Jagoe, Ph.D., Florida A&M University
Corey Garza, Ph.D., California State University-Monterey Bay
Phyllis Gray-Ray, Ph.D., Florida A&M University

*Coastal Resilience:*
Richard McLaughlin, Ph.D., Texas A&M University at Corpus Christi
Phyllis Gray-Ray, Ph.D., Florida A&M University
J. Cho, Ph.D., Bethune-Cookman University
Hongmei Chi Ph.D., Florida A&M University
Elijah Johnson, Ph.D., Florida A&M University

*Place-Based Conservation:*
David Hicks, Ph.D., University of Texas Rio Grande Valley

Charles Jagoe, Ph.D., Florida A&M University
Phyllis Gray-Ray, Ph.D., Florida A&M University
Michael Abazinge, Ph.D., Florida A&M University
Carlos Cintra, Ph.D., University of Texas Rio Grande Valley
Alejandra Fierro-Cabo, Ph.D., University of Texas Rio Grande Valley
Erin Easton, Ph.D., University of Texas Rio Grande Valley
Richard McLaughlin, Ph.D., Texas A&M University at Corpus Christi
Paul Montagna, Ph.D., Texas A&M University Corpus Christi
Dr. Greg Stunz, Ph.D., Texas A&M University Corpus Christi
Dr. David Yoskowitz, Ph.D., Texas A&M University Corpus Christi
Brent Thoma, Ph.D., Jackson State University
Timothy Turner, Ph.D., Jackson State University
Ranjani Kulawardhana, Ph.D., Jackson State University

Focal Area Participants – Students (See Appendix Table 2)

# I. Accomplishments

Major Activities: See Executive Summary

Significant Results: See Executive Summary

Key outcomes or other achievements: See Executive Summary

## NOAA CCME Areas of Focus

### Coastal Resilience Summary

The Coastal Resilience Focal Area (CR) has a total of 6 students from the six CCME institutions: 2 Ph.D. and 4 M.S. students. One student presented her research synopsis to the focal area faculty during the reporting period, 4 had done so in earlier reporting periods, and the newest student plans to present his synopsis in May 2019. The new synopsis was presented by TAMUCC Ph.D. student Mariana León-Pérez and was entitled "Vulnerability of Coastal Social-Ecological Systems to Sargassum Beaching Events". It will study impacts of the massive increase in influx of pelagic Sargassum macroalgae accumulating along Caribbean coasts. The goal of this research is to develop a conceptual and operational framework encompassing preexisting social-ecological data as well as new data, to spatially characterize coastal social-ecological systems and subsequently identify, map and rank the vulnerability of those systems to Sargassum beaching events.

CR faculty reviewed the student synopses presented, provided valuable feedback, and approved them at the focal area level. The presented synopses were submitted to the CCME Management Team for review, feedback, and approval. Two students have completed a NERTO, one is conducting hers and will complete it March 29th, one is scheduled for summer of 2019, and two others are tentatively scheduled for 2020 or later. One MS student defended her thesis entitled "Disaster Coordination in the Rio Grande Valley" and graduated in December 2018. Her graduate advisor was Owen Temby, UTRGV. Currently, the focal area conducts monthly conference calls in conjunction with the PBC and the Social Science Committee. CR core competencies have been reviewed and approved. Modules and learning lectures for the 2019 virtual CWCC were prepared and uploaded to Blackboard.

**CWCC**

Dr. Temby, CR Chair, worked with his colleagues at UTRGV to develop a schedule for the CWCC. The course incorporates various training components that centers on a problem-based learning activity – this year focused around a proposed causeway project that would provide communities on a barrier island in South Texas an alternative route to the mainland. The causeway makes an interesting case for coastal resilience, providing a key escape route for communities while substantially damaging sensitive ecosystems, posing some interesting community resilience and ecological considerations for student to grapple with. As part of the mock town hall meeting – the capstone event for the CWCC – students will assume various stakeholder roles, develop some recommendations, and present their cases.

**CCME CR Competencies**:
The CR worked with the CCME Education Expert and the External Evaluator to finalize 4 core competencies that are aligned with the CR objectives. Two of the 6 Social Science core competencies were adopted by the CR to further integrate social science across the Center. These 6 CR core competencies are associated with gaining critical skills needed for the NOAA-mission science workforce. They guide the development of training, including the CWCC curriculum, to ensure students receive training that is aligned with the CR objectives under this award. Coursework at the CCME partner institutions is also evaluated for alignment with CR core competencies and objectives as a means to evaluate student attainment.

**CR Goals and Objectives**:

The following is the list of specific objectives over the 5 funding years.

1. Apply knowledge of natural and nature-based infrastructure to address issues of extreme weather events
2. Engage in community-based approaches for implementation of natural and nature-based infrastructure
3. Create a model for a community-based approach to assessing needs and implementing solutions for mitigation of impact from extreme events and sea level rise using natural and nature-based infrastructure
4. Develop tools for the assessment of natural and nature-based infrastructure in a selected variety of coastal ecosystem and communities for mitigation of impact of extreme events and sea level rise

During the prior reporting period, the CR developed goals and strategies for Year 3. Accomplishments toward those goals are noted below.

**Accomplishments this reporting period:**

**1.** Status of Students
   a. The CR focal area has a total of 5 active students: 2 Ph.D. and 3 Masters level.
      - Two students joined the focal area since September 2018 (YR 3 Goal 1)
   b. The demographics of the students
      - 4 are from underserved, underrepresented communities
      - 2 male and 4 female students

**2.** Student synopses submitted to and approved by CR
   a. One new student synopsis presented and was approved.
   b. Total of 5 synopses (out of 6 graduate students) have been presented and approved.

**3.** Student NERTO updates (YR 3 Goal 2)
   a. Two students have completed a NERTO
      - Mallory Brooks
      - Cristina Madrid
   b. One NERTO is currently underway
      - Miya Pavlock McAuliffe

c. One NERTO is scheduled for summer 2019
   - Sam Mwenda

d. The two new CR students are seeking NERTO projects but set scheduling goals.
   - Mariana León Pérez (summer 2020)
   - Anthony Lima (summer 2021 or 2022)

**4.** Student completion of program

a. Cristina Madrid (UTRGV, MA) defended her thesis entitled "Disaster Coordination in the Rio Grande Valley" and graduated in December 2018. Her graduate advisor was Owen Temby, UTRGV.

**5.** CR members Mikell Smith and Richard McLaughlin worked with NOAA CCME leadership to develop a session proposal for the 2019 Coastal & Estuarine Research Federation (CERF) conference entitled "Education Partnerships in Coastal and Marine Science". The proposal was accepted. This session will provide an opportunity for CCME and other NOAA EPP Centers to share their work – the education partnerships and the research accomplished within them that trains the next generation of NOAA mission scientists. NOAA EPP assisted in further developing the session and promoting CSC participation. CR has engaged with the coordinate of the CERF underserved, underrepresented minority program and will develop a plan for recruitment activities at the conference (YR 3 Goal 1, Strategy A).

**6.** CWCC curriculum that is aligned with the CR core competencies was developed and the online portion was released to students. The community issue for the problem-based learning activity is particularly applicable to coastal resilience science. CR Chair, Owen Temby, whose institution will host the CWCC, is engaging community stakeholders and will release video interviews in April to further prepare students for the CWCC activities (YR 3 Goal 3, Strategy A & B).

**CCME Coastal Resilience Community of Practice (CRCP) Year 3 Goals and Strategies**

**Goal 1. Recruit 3 more students (CCME Goal 1, Year 3 Milestones)**

*Strategies:*

A. Work with the Coastal & Estuarine Research Federation (CERF) and their biennial conference to recruit underserved, underrepresented students.
   I. Promote CCME through participation in their existing underserved, underrepresented initiative.
   II. Leverage opportunities presented by the fact that NOAA generally provides funding for the conference and NOAA scientists we need to connect with participate significantly.
   III. Conduct CCME recruitment activities at CERF since their biennial conferences run during the intervening years between NOAA EPP Biennial Forums.

B. Determine which CCME institutions may have existing and future openings that could be filled by potential CRCP students.
    - Ask FAMU to provide a running inventory of available student openings at each consortium institution.
C. Promote graduate fellowships to CCME undergraduate students
    - Work with partner institutions to place qualified undergraduate students into available CRCP graduate positions.

**Goal 2. Facilitate student progress toward NERTO completions (CCME Goals 1, 2, 3)**

*Strategies:*

A. Work with CRCP students and faculty to identify/schedule NERTOs.
B. Work with FAMU and EPP to monitor student progress and assist, where appropriate.
C. Assist with proposal synopsis approval process to obtain NOAA assistance securing mentors and NERTOs.
D. Circulate potential NERTO opportunities that achieve CRCP Objectives.
E. Circulate CRCP Core Competencies and encourage NERTO alignment with them.

**Goal 3. Facilitate student training opportunities and ensure alignment with CRCP core competencies (CCME Goals 1, 2, 3)**

*Strategies:*

A. Develop the 2019 CWCC course based on CRCP core competencies.
B. Map training curriculum, including CWCC, webinar, and online courses, to CRCP core competencies and provide that information to CCME PIs.
C. PIs and faculty advisors monitor and ensure student attainment of CRCP core competencies.

## Coastal Intelligence Summary

In the current reporting period, CI has a total of 23 active CCME Scholars (5 Ph.D., 8 M.Sc. and 10 B.Sc.) and is pursuing additional students, including a community college transfer student (Appendix Table 2). This includes one new Ph.D. and two new M.Sc. students; and three Bachelors/transfer undergraduates. Two CCME graduate students presented and had their synopsis approved by the CI this reporting period, third revised synopsis was also approved. In total, CI has approved seven (3 Ph.D. and 5 M.Sc.) student proposal synopses (Appendix Table 2). Eleven (of the thirteen) CCME CI Graduate Scholars have identified NOAA and NOAA NERTO mentors (Appendix Table 2). One additional Scholar completed their NERTO during this period, for total of four CCME CI Scholars have completed their NERTOs.

Dr. Emily Jones, the second CCME Postdoctoral Researcher, submitted her Postdoctoral Development Plan to EPP/MSI, and the plan is in revision. Her postdoctoral NOAA experience entitled “Impacts of mangrove expansion into Northern Gulf of Mexico salt marshes” will be conducted with Dr. Jennifer Doerr at the NOAA Southeast Fisheries Science Center (SEFSC) in Galveston, TX. The experience is tentatively scheduled to start summer 2019.

There are 16 CI faculty mentors at the six institutions, with a subgroup that meets for monthly CCME CI conference calls on the 3rd Monday of the month. Also participating in the calls are NOAA representatives, the CCME Assistant and Associate Directors, the Education Lead, the Social Science Lead, the Distinguished Research Scientist, and a Postdoctoral Researcher. CI faculty members also serve as advisors and supervise student projects submitted to other focal areas in the topics of Place-Based Conservation and Coastal Resilience, as many of the student projects cross-cut the focal areas.

The CI focal area developed and approved the Year 3 CI goals and strategies and CI student core competencies, with input from the CCME Education Team and External Evaluator (Appendix Table 3). The CI faculty have revised and expanded the scope of material covered in the CWCC to ensure alignment and coverage of the CI student core competencies. Those competencies not covered during the CWCC will be covered through the webinar series previously developed. CCME students and faculty continue to engage in numerous research/outreach/education/community events and activities aligning with CI at the campus, local, regional, and national scales.

**Coastal Intelligence Goals**: To recruit, train and graduate CCME Scholars to generate and use existing data stream and decision-support tools for 1) ecosystem assessment and restoration and 2) to address coastal stressors and hazards. CCME Scholar research products should extend Coastal Intelligence to support Place Based Conservation and Coastal Resilience efforts of various groups, including policy maker and stakeholders.

The following is the list of specific objectives over the 5 funding years:

- Improve sea-level rise impact projections by enhancing the SLR observation network
- Improve understanding of ecosystem health through investigations focused on the influence of stressors on ecosystem processes
- Improve understanding of ecosystem dynamics using archived, existing, and new data streams
- Develop database and decision support tools to address coastal hazards
- Identify/develop best practices for ecosystem restoration and assessment

**Report of CCME Scholar CI Competencies:** CI worked with Education Team and External Evaluator to finalize seven competencies for the CI students to achieve prior to their completion of the CCME program (Appendix Table 2). Competencies will be addressed through a combination of degree program curricula, CI webinar and the CWCC. Partners were asked to complete a competency matrix chart to their degree programs. CI faculty revised their contributions to the CWCC online and on-site material to align with competencies. Lastly, a set of webinars were identified to supplement competencies topics; this includes circulating OneNOAA Science Seminars announcements relevant to CI to the scholars.

**Accomplishments this reporting period:**

**7.** Status of CCME Student Scholars (Appendix Table 2):
   a. The CI focal area has a total of 23 students from the six CCME institutions: 5 Ph.D., 8 M.Sc., and 10 B.Sc. scholars, including 4 community college transfer.

**8.** Student synopses submitted to and approved by CI (Appendix Table 2)
   a. Two new student synopses were presented and approved.
   b. A total of 8 synopses have been presented and approved at the focal area (one Scholar graduated in a previous reporting period and is not included in Appendix Table 2).
   c. In addition to their written synopsis, Scholars are now required to provide an oral presentation of their synopsis to the focal area during the monthly calls.

**9.** Student NERTO updates (Appendix Table 2)
   a. One student completed their NERTO
      - Brianna Alanis
   b. Four are currently scheduled for Summer 2019
      - Andrea Pugh
      - Patricia Cockett
      - Queriah Simpson
      - Ra'Teema Etienne (Stanley)
   c. Three are currently scheduled for Fall 2019
      - Angelique Rosa-Marin
      - Caroline Rodriguez
      - Prian Vidal
   d. All except two graduate students have identified NOAA/NERTO mentors and pending NERTO locations.

**10.** Student completion of program
   a. None in this period

**11.** Leveraged **Student** Research/Training/Outreach Activities

| **Leveraged Research/Training, Sept 1st, 2018 to Feb 28th, 2019** |
|---|
| **Angelique Rosa-Marin*** FAMU has been accepted to ASLO's 2019 Limnology and Oceanography Research Exchange (LOREX) program in Australia. Operated by Advancement of the Sciences of Limnology and Oceangraphy with support through NSF.Website (https://www.aslo.org/page/lorex) |
| **Brianna Alanis*** and her mentor Dr. John Chip Breier**,** UTRGV, participated in a hydrothermal research cruise on R/V Nautilus using ROV Hercules and a variant of the Clio sampling system to study geochemical and biological processes at Loihi Seamount. This cruise is funded by NASA astrobiology and ship time is funded by NOAA Office of Exploration. |

| **Conferences/Meetings/Scientific Session (* CCME student co-authors) Sept 1st, 2018 to Feb 28th, 2019** |
|---|

| |
|---|
| John A Breier Jr; Michael Jakuba; Mak A Saito; Gregory Dick; Daniel Gomez-Ibanez; Kaitlyn Tradd; Sharon L Grim; Rebecca Chmiel; Matthew R McIlvin; Abigail Emery Noble; **Brianna Alanis***; Marissa Morgan Kellogg and Javier Garcia. *Clio: a vertical sampling AUV for next-generation ocean sectional studies.* Ocean Science Meeting. Portland, OR. Dec 2018 |
| **Walker, L*.,** Wetz, M., Montagna, P., and Hu, X. Feb 2019. Impact of Hurricane Harvey on the water quality of Texas estuaries. Association for the Sciences of Limnology and Oceanography. San Juan, Puerto Rico. |
| Long, R.A., Mays, J.N., Hollis, B.S. **Rolle, S.*** Feb 2019. Impact of Bisphenol A Upon Aqua-c Bacterial Organic MaPer U-liza-on and Ecosystem Service. Association for the Sciences of Limnology and Oceanography. San Juan, Puerto Rico. |
| **Angelique Rosa-Marín*,** Michael Martínez-Colón, Charles Jagoe, and Cherryl Woodley. Feb. 2019. ENVIRONMENTAL ASSESMENT IN CORAL REEFS AT JOBOS BAY, PUERTO RICO. Association for the Sciences of Limnology and Oceanography. San Juan, Puerto Rico. |
| **Olivia Boisen** (CSUMB) attended the SACNAS conference in San Antonio October 10-13. |
| **Lily Walker** (TAMU-CC) attended the SACNAS conference in San Antonio October 10-13. |
| **Patricia Cockett** (TAM-UCC) attended the SACNAS conference in San Antonio October 10-13. |

| **Outreach events Sept 1st, 2018 to Feb 28th, 2019** |
|---|
| **Melissa Meredith,** CSUMB CCME undergraduate presented her CCME work at the upcoming Western Society of Naturalists Meeting Sep 2019. |

**12.** Postdoctoral NOAA experience application submitted and in revision

a. Dr. Emily Jones is finalizing her postdoctoral NOAA experience with Dr. Jennifer Doerr at the NOAA Southeast Fisheries Science Center (SEFSC) in Galveston, TX. The experience is scheduled to start summer 2019.

## Place-based Conservation Summary

The Place-Based Conservation Focal Area (PBC) has a total of 29 students from the six CCME institutions: 4 Ph.D., 11 M.S., and 12 B.S level, and 2 transferred students. Among the 15 graduate students, 13 presented their research synopses to the focal area faculty (Appendix Table 2). The presented synopses were reviewed, edited, and approved at the PBC level and submitted to the CCME Management Team. Four students have completed NERTO; two are currently scheduled in spring 2019 NERTO; three are scheduled for NERTO in summer 2019 (Appendix Table 2). One MS student defended his thesis entitled, Measuring Connective Capacity in the Gulf of Mexico Fishery Management Network" on November 30th, 2018. His thesis advisor is Owen Temby. Anthony Lima's defense was virtually broadcast for center-wide attendance.

Postdoctoral researcher, Dr. Easton has been approved for her 6-month NERTO tenure at the NOAA's Deep-Sea Coral Ecology laboratory at NCCOS in Charleston, South Carolina. Currently, the focal area conducts monthly conference calls in conjunction with the CR and the Social Science team. PBC core competencies have been reviewed and approved. Modules and learning lectures for the 2019 virtual CWCC were prepared and uploaded to the Blackboard. CCME students and faculty are actively engaged with numerous research/outreach/education/community events and activities aligning with PBC at the campus, local, regional, and national scales.

**PBC Goals**

Develop place-based knowledge and comprehensive ecosystem service assessment tools that improve "Coastal Intelligence" and enhance "Coastal Resilience"; Work with stakeholders and communities to put these tools into action; and Train the next generation of environmental professionals is a key part of our strategy. Particularly, our education, research, and outreach goals are designed to strengthen conservation and restoration at given locations and situations through involvement of local community in planning, developing, implementing, and evaluating ecosystem service assessment tools.
The following is the list of specific objectives over the 5 funding years.

5. Develop outreach, policy, and decision-making tools
6. Link natural and applied science, social sciences, and policy-making to increase management capacity
7. Engage and involve local communities for balanced conservation that addresses demands for coastal resource use and economic development
8. Enhance community engagement by emphasizing the unique opportunities and issues connected with special places of concern
9. Provide comprehensive ecosystem service valuation tools and place-based knowledge
10. Develop and implement ecosystem service assessment tools that balance conservation with the demands for coastal resource utilization and economic development

**Report of CCME PBC Competencies**

The PBC worked with External Evaluator to finalize seven competencies for the PBC students to achieve prior to their completion of the CCME program (Appendix Table 2). In order to facilitate assessment of the students meeting the required competencies, a competency matrix chart was completed through inputs from the CCME institutions of their degree programs' curricula and required activities for students. Current academic curricula required for the CCME students at each of the partner institutions provide topics and lectures The new 2019 PBC CWCC online modules and on-site agenda were and are being designed to ensure the exercises and information will enable the students to gain the competencies if successfully completing the modules.

**Accomplishments this reporting period**

**Accomplishments this reporting period:**

1. Status of Students (Appendix Table 2):

a. The PBC focal area has a total of active 29 students from the six CCME institutions: 4 Ph.D.; 11 M.S.; and 12 B.S level and 2 transferred students.
    - One MS student was added to the focal area since September 2019
b. The demographic of the students
    - 12 African American; 13 Hispanic; and 6 Caucasian
    - 10 male and 21 female students

**2.** Student synopses submitted to and approved by PBC (Appendix Table 2)
a. One new student synopsis was presented and approved.
b. Total of 13 synopses (out of 15 graduate students) have been presented and approved at the focal area.

**3.** Student NERTO updates (Appendix Table 2)
a. Four students have completed NERTO
    - Taylor Eddy
    - Lauren Parker
    - Rebekah Hernandez
    - Anthony Lima
b. Two are currently scheduled in spring 2019 NERTO
    - Elizabeth Murphy (Started Jan. 21, 2019)
    - Diana Del Angel
c. Three are scheduled for NERTO in summer 2019
    - Javier Navarro
    - Elizabeth Del Rosario
    - Meghan Martinez (SSIO approved)
d. All except two graduate students have identified NOAA/NERTO mentors and pending NERTO locations.

**4.** Student completion of program
a. Anthony Lima (UTRGV, MS) defended his thesis entitled, Measuring Connective Capacity in the Gulf of Mexico Fishery Management Network" on November 30th, 2018. His thesis advisor is Owen Temby. Anthony Lima's defense was virtually broadcast for center-wide attendance. He has been accepted as a NOAA CCME Doctoral student at partner institution TAMUCC.

**5.** Postdoctoral NERTO application submitted and approved
a. Dr. Erin Easton received the approval for a 6-month NOAA tenure at Charleston, SC in the Deep Coral Ecology Laboratory of Peter Etnoyer. Her NERTO will start in March 2019. She will be working on a *Hypnogorgia* and/or *Swiftia* genetic project. Dates and details will be settled at a meeting in December.

**6.** Leveraged Research/Training/Outreach Activities
a. Outreach Events
    - Kelsey Martin (TAMUCC, Ph.D.) hosted a workshop at Oso Bay Wetlands Preserve September 22nd on "How to become a shark." Kids learned about what makes sharks different from a bony fish, how to identify the parts of a sharks, and they learned about some of the different species in our area. About 30 people attended this workshop.
    - Meghan Martinez (TAMUCC, M.S.) collected quarterly vegetation samples with undergraduates and local high school students. Martinez also spent time during September and October working with

undergraduates and high school students on database management, data analysis, and presentation for an October conference in Spokane, Washington.

- The B-CU students were interviewed and filmed by a local newspaper reporter and photographer as well as by B-CU's Communications' videographer/PR while they were in the field at the study location.
    1) B-CU students work to improve area's waters. https://www.news-journalonline.com/news/20181205/b-cu-students-work-to-improve-areas-waters. Daytona Beach News Journal. Dec 6, 2018
    2) Bethune-Cookman University Living Shoreline Project. https://www.youtube.com/watch?v=qlwfh1ScJ0g&t=30s
- B-CU CCME students, Abraham DaSilvio, Mallory Brooks, and Samuel Mwenda participated and hosted a Coastal Science Research Workshop on October 27th, 2018 at the Ormond Beach Environmental Discovery Center at Central Park. Ormond Beach, FL
    1) They introduced the CCME program and the current research at B-CU, reaching out to 55 participants.
    2) During the workshop, Samuel Mwenda conducted a public education workshop on use of native plants in non-point source pollution management and pre- and post-workshop surveys on the participants.

b. Student Conferences/Meetings/Scientific Session (* CCME student; ** CCME faculty)

- Abraham DaSilvio*, Samuel Mwenda*, Adeljean Ho, H.J. Cho**. 2018. Construction of Treatment Wetland to Reduce Nutrient Loading from Stormwater Runoff into Coastal Waters. 2018 Florida Aquatic Plant Management Society Conference, Oct 15-18, 2018, Daytona Beach, FL (poster) (* indicates CCME student presenter/author): awarded conference travel and registration to present the two (one Oral and One poster) presentations.
- Meghan Martinez*. Influence of Oyster Reef Restoration on Benthic Infauna and Reef-Associated Macrofauna, Society for Ecological Restoration & Society of Wetland Scientists conference, October 15-18, 2018, Spokane, Washington.
- M. White, A. DaSilvio*, and H.J. Cho**. 2019. Construction of a Treatment Wetland to Reduce Nutrient Loading from Stormwater Runoff into Coastal Waters. Feb 22-23, 2019. Florida Undergraduate Research Conference. University of North Florida, Jacksonville, FL. (Poster)
- M. White, A. DaSilvio*, S. Mwenda*, and H.J. Cho**. 2019. Construction of a Treatment Wetland to Reduce Nutrient Loading from Stormwater Runoff into Coastal Waters. 2019 Indian River Lagoon Symposium., Harbor Branch Oceanographic Institution, FL. (Oral)
- C. Garza**, L. Harris, J. Parrish, J. Posselt. Place based science in the Anthropocene. 2019 ASLO meeting, San Juan, Puerto Rick.

- Javier Navarro*, Alejandro Fierro**, Carlos E. Cintra-Buenrostro**. Facilitative interaction between *Batis maritima* and *Avicennia germinans* seedlings: a look at microenvironmental parameters and implications for mangrove restoration. 23rd Annual Conference Meeting Society for Ecological Restoration Texas Chapter. San Antonio, Texas. November 9-11, 2018. (Oral Presentation)

**13.** *Leveraged Funding:* New grants/projects for CCME PBC faculty:

- CSUMB has secured a contract agreement with Moss Landing Marine Labs to conduct drone based aerial surveys of rhodolith beds in the California Channel Islands. Drones purchased with CCME funds will be used to conduct the surveys.
- CSUMB has entered into a new research program with NOAA Southwest Fisheries Science Center and the Monterey Bay Aquarium Research Institute to begin a student of trophic dynamics of the California market squid fishery in Monterey Bay.
- CSUMB has secured funding from NSF to begin the SACNAS Geo-Futures program.

Several leveraged projects are ongoing:

a. Commercial Launch Site Species Monitoring Survey (Construction Phase: 2017-2018); SpaceX, D.W. Hicks (CCME UTRGV),
b. The South Texas Banks Ecosystem: Oceanography, Biodiversity and Genetics. Texas Sea Grant Program, 2015-2017. $179,027. Diego Figueroa and David Hicks (CCME UTRGV). Includes collaborative works with The Flower Garden Banks National Marine Sanctuary and NOAA's Deep Sea Coral Research and Technology Program's Southeast Deep Coral Initiative (SEDCI). Includes CI related activities such as multibeam bathymetry, multibeam fisheries assessments, water quality, and ROV surveys of fish and invertebrate populations.
c. Mesophotic Reef Anchoring Impact Study. NOAA CR Funding. To begin in 2018, David Hicks (CCME UTRGV)
d. Implementing and Evaluating Living-Shorelines as Controls for Nonpoint-Source Pollution and as a Tool for Public Education. The Scientific Research Disaster Recovery Grants of the Gulf Research Program. The National Academies of Sciences, Engineering, and Medicine, $46,000. 2018-2019 (CCME B-CU) - Supports data collection and sampling processing fees for CCME student
e. Implementing and evaluating the effectiveness of native vegetative buffers at controlling nonpoint source pollution and as a tool for public education along the Indian River Lagoon, FL Department of Environmental Protection and EPA. $494,693 (CCME B-CU) - Supports data collection and sampling processing fees for CCME student
f. Tree Fund for Reed Canal Basin Stormwater Improvement through Treatment Wetland Construction in South Daytona, FL, Volusia County, 2018. $20,000, (CCME B-CU) - Construction of treatment wetland for CCME students
g. Wetland plant grant from Volusia County. Volusia County, 2018. $5,000 (CCME B-CU) - Construction of treatment wetland for CCME students
h. Reed Canal Basin Stormwater Improvement through Treatment Wetland Construction in South Daytona, FL, Indian River Lagoon National Estuary

Program, $181,148, 10/1/2017-09/30/2019 (CCME B-CU) - Construction of treatment wetland and sampling processing fees for CCME students

i. Estimating absolute abundance of Red Snapper in the Gulf of Mexico, Sea Grant/NOAA/USM, $9,500,000, Greg Stunz (CCME TAMUCC).
j. NFWF-Connecting Youth to Coastal Habitat Restoration in Texas, National Fish & Wildlife Foundation, $249,293, Jennifer Pollack, (CCME TAMUCC).

# II. Products of Award

**Degrees Awarded: Award Total: *4 B.S., 1 M.S.***

**Student Publications in Journals:** No student publications were completed during the current reporting period.

**Faculty Publications in Journals:**
*Only publications with CCME award attribution are included.*

*Table 1: Faculty Publications*

| | Faculty Member Name | Title | Journal/Proceedings |
|---|---|---|---|
| 1 | Fenxiang Han, Ph.D. | Toxicity of As in Crassostrea virginica (Gmelin, 1791) from the Northern Gulf of Mexico at the presence of Zn and its antioxidant defense mechanisms | Ecotoxicology and Environmental Safety 172: 514-522 |
| 2 | Erin Easton, Ph.D. | Complete mitochondrial genome of Callogorgia cf. gracilis (Octocorallia: Calcaxonia: Primnoidae) | Mitochondrial DNA Part B |
| 3 | Erin Easton, Ph.D. | Preliminary Multivariate Comparison of Coral Assemblages on Carbonate Banks in the Western Gulf of Mexico | Gulf and Caribbean Research 29 (1): 23-33 |

***Editor of Special Journal Issues***

**Books:**

**Book Chapters:**

**Thesis/Dissertations:**

Lima, A.R. Measuring Connective Capacity Throughout the Gulf of Mexico Fishery Management Network. Thesis. University of Texas Rio Grande Valley, Dec 2018.

Madrid, C. L. (2018). Local disaster planning and preparedness coordination in the Rio Grande Valley (Order No. 10239793). Available from ProQuest Dissertations & Theses Global. (2177357480).

**Conference Papers, Posters and Presentations:**
**Student Presentations**

**MAKE SURE TO GET PRESENTATIONS FROM FAMU, NOT IN REPORTS**

*Table 2: Student Presentations*

| | Student Name | Title | Conference/Meeting/Other |
|---|---|---|---|
| 1 | Abraham DaSilvio and Samuel Mwenda | Development of Wetlands to Reduce Nutrient Loading from Stormwater Runoff into Coastal Waters | 2018 Florida Aquatic Plant Management Society Conference |
| 2 | Abraham DaSilvio and Samuel Mwenda | Construction of Treatment Wetland to Reduce Nutrient Loading from Stormwater Runoff into Coastal Waters | 2018 Florida Aquatic Plant Management Society Conference |
| 3 | Meghan Martinez | Influence of Oyster Reef Restoration on Benthic Infauna and Reef-Associated Macrofauna | Society for Ecological Restoration & Society of Wetland Scientists conference |
| 4 | Brianna Alanis | Enabling and Applying High Quality Oxygen and Nutrient Measurements from Autonomous Platforms | Atlantic Oceanographic and Meteorological Laboratory (AOML) NOAA facility (AMLO) |
| 5 | Samuel Mwenda | Comparative water quality study at city parks with and without stormwater outlets on the Halifax River in the Ormond By the Sea Area | ShORE (Sharing Our Research with Everyone on the Indian River Lagoon) 2018 |
| 6 | Taylor Eddy | John Field Diet assessment and reproductive success of Californiaspiny lobster (Panulirus interruptus) in relation to marine protected areas | 2018 Western Society of Naturalists Meeting |

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|---|---|---|---|
| 7 | Lauren Parker | Groundfish habitat associations on the lost reefs of the Monterey<br>Bay National Marine Sancturay: Implications for conservation and management | 2018 Western Society of Naturalists Meeting |
| 8 | Meghan Martinez and Jennifer Beseres Pollack | Oyster reef restoration:<br>influence on oyster recruitment and health, benthic infauna, and reef-associated macrofauna | Gulf and Estuarine Research Society |
| 9 | Mariana León-Pérez | Initial Steps of an Adaptive Management Exercise to Strengthen Puerto Rico's Coral Reef Monitoring<br>Program | 71th Gulf and Caribbean Fisheries Institute Conference |
| 10 | Mariana León-Pérez | Vulnerability of Coastal Social-Ecological Systems to Sargassum Beaching Events | NOAA CCME call for the<br>Place-based Conservation, Coastal Resilience, and Social Science Committees |
| 11 | Alejandro Fierro and Carlos E. Cintra-Buenrostro | Facilitative interaction between Batis maritima and Avicennia germinans seedlings: a look at microenvironmental parameters and implications for mangrove restoration. | 23rd Annual Conference Meeting Society for Ecological Restoration Texas Chapter |
| 12 | Alejandro Fierro | An invasive ungulate may restrain mangrove range expansion on the south Texas coast | 23rd Annual Conference Meeting Society for Ecological Restoration Texas Chapter |
| 13 | Alejandro Fierro | Exploring allelopathy of native woody species as potential approach for thorn forest restoration: a test on inhibition of germination<br>and emergence | 23rd Annual Conference Meeting Society for Ecological Restoration Texas Chapter |
| 14 | David Hicks and Alejandro Fierro | Successful dune restoration using foundation species: the case study of South Padre Island | 23rd Annual Conference Meeting Society for Ecological Restoration Texas Chapter |
| 15 | Carlos E. Cintra-Buenrostro | Increasing workforce diversity through "Stimulating Hispanic Participation in the Geosciences" (SHIP-GEO) program at Rio Grande Valley/South Texas | 2018 (130th) Annual Meeting, Geological Society of America |

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|---|---|---|---|
| 16 | Diana Del Angel, Lily Walker, Mariana León Pérez, Meghan Martinez, Kelsey Martin | NOAA-Mission-Critical Research by NOAA CCME Scholars at Texas A&M University-Corpus Christi | NOAA CCME webinar series |
| 17 | Meghan Martinez | Oyster Reef Restoration: Influence on Oyster Recruitment, Benthic Infauna, and Reef-Associated Macrofauna | Texas A&M Marine Biology IDP 9th Annual Retreat and 11th Science Symposium. |
| 18 | Carlos E. Cintra-Buenrostro | A comparison of population dynamics from Red Snapper associated with inshore and offshore artificial reefs in the northwestern Gulf of Mexico | Marine artificial reef research and development: integrating fisheries management objectives. |
| 19 | Carlos E. Cintra-Buenrostro | Investigating reproductive characteristics of Gray Triggerfish on three artificial reefs in the northwest Gulf of Mexico | Marine artificial reef research and development: integrating fisheries management objectives |
| 20 | Taylor Eddy | Seasonal changes in diet of California spiny lobster (Panulirus interruptus) in relation to marine protected areas | 2019 ASLO meeting |
| 21 | Olivia Boisen | Quantifying the cross-sensitivity of glass pH electrodes in alkaline solutions | 2019 ASLO meeting |
| 22 | Abraham DaSilvio, Samuel Mwenda | Construction of a Treatment Wetland to Reduce Nutrient Loading from Stormwater Runoff into Coastal Waters | Florida Undergraduate Research Conference |
| 23 | Abraham DaSilvio, Samuel Mwenda | Construction of a Treatment Wetland to Reduce Nutrient Loading from Stormwater Runoff into Coastal Waters | 2019 Indian River Lagoon Symposium |
| 24 | Lily Walker | Impact of Hurricane Harvey on the water quality of Texas estuaries | 2019 ASLO Meeting |

**Faculty Conference Papers, Posters, and Presentations:**

*Table 3: Faculty Presentations*

| Faculty Member Name | Title | Conference/Meeting/Other |
|---|---|---|
| Richard McLaughlin, Ph.D. | Get to Know Your Faculty Series | CCME Student Meeting, Online Webinar |
| Richard McLaughlin, Ph.D. | International Opportunities in Science and Conservation | HRI Retreat at Caldwell Ranch |
| Richard McLaughlin, Ph.D. | Plans and Goals of the Coastal and Marine Policy and Law Program | HRI Retreat at Caldwell Ranch |
| Richard McLaughlin, Ph.D. | Gulf of Mexico Decommissioning and Rigs to Reefs Policies | SUT/MASTS Workshop |
| Richard McLaughlin, Ph.D. | Student Workshop on International Coastal and Marine Management (SWIMM) | MarCuba Conference |
| Owen Temby, Ph.D. | Climate Change and Its Impact | Valley Environmental Summit 2018 |
| Corey Garza | Place Based Science in the Anthropocene: ASPIRE (Active Societal Participation in Research and Education) | 2018 Western Society of Naturalists Meeting |
| Michael Wetz, Ph.D. | Synthesis of water quality studies in Baffin Bay with a view towards Solutions | 2018 Gulf Estuarine Research Society meeting |
| Richard McLaughlin | Gulf of Mexico Decommissioning and Rigs to Reefs Policies | SUT/MASTS Workshop |
| Paul Montagna, Ph.D. | Focused flows for natural hatcheries | Gulf Estuarine Research Society |
| Paul Montagna, Ph.D. | Customizing ODS Graphics to Publish Visualizations | South Central SAS Users Group Meeting |
| Paul Montagna, Ph.D. | What I Wish I Knew When I Was a Graduate Student: Turning Your Research into Publications | Coastal & Estuarine Research Federation Webinar |

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|---|---|---|
| Owen Temby, Ph.D. | Climate change and its implications for the Rio Grande Valley | Eco Rio Environmental Studies Symposium |
| Cho, H.J. | Living Shorelines for Stormwater Runoff Management within the Watershed Areas of Mosquito Lagoon and Halifax River | The Southeast Volusia Audubon Society meeting |
| Han F.X. | Biogeochemistry of Depleted Uranium in US Army shooting site and potential remediation | The 83th Annual Conference of Mississippi Academy of Science |
| Han F.X. | Biogeochemistry of depleted uranium in Army Shooting ranges | Fifteenth International Symposium on Recent Advances in Environmental Health Research |
| Owen Temby, Ph.D. | Research on disaster resilience in the Rio Grande Valley | Transforming Our World Strategic Initiatives Symposium |
| Michael Wetz, Ph.D. | Spatial-temporal distribution of Aureoumbra lagunensis in Baffin Bay, Texas | 2019 ASLO Meeting |
| Michael Wetz, Ph.D. | Trends in the frequency and duration of Texas “red tide” | 2019 ASLO Meeting |
| Michael Wetz, Ph.D. | Impact of Hurricane Harvey on the water quality of Texas estuaries | 2019 ASLO Meeting |
| Steven L. Morey, Ph.D. | Spatio-Temporal Variability of Coastal Upwelling from Global Satellite Wind Coastal Upwelling Index Databases | 2019 ASLO Aquatic Sciences Meeting |
| Phyllis Gray-Ray, Ph.D., Mikell Smith, Richard McLaughlin, Ph.D., J. Cho, Ph.D., M. Dovil, and Sharmini Pitter, Ph.D. | Training for Science that Matters: Integrating Social Sciences at the NOAA Center for Coastal and Marine Ecosystems | American Meteorological Society Annual Meeting, Phoenix AZ |

**Technologies or Techniques: Nothing to report at this time.**

**Patents: Nothing to report at this time.**

**Inventions: Nothing to report at this time.**

**Licenses: Nothing to report at this time.**

**Websites:**
NOAA CCME website: ccme.famu.edu
NOAA CCME CSUMB Information page: https://csumb.edu/cme/center-coastal-and-marine-ecosystems
NOAA CCME TAMUCC Information page: https://www.harteresearchinstitute.org/ccme

**Other Products: Nothing to report at this time.**

# III. Participants in Award Performance

See Executive Summary and Appendix Table 2

*Table 4: CCME Award Participants*

| Name | Most Senior Project Role | Project Hours Worked per Month |
|---|---|---|
| **Larry Robinson, PhD** | Director/Principal Investigator | 10 |
| **Michael Abazinge, Ph.D.** | Associate Director | 10 |
| **Sharmini Pitter, Ph.D.** | Assistant Director | 160 |
| **Bernadette Kelley, Ph.D.** | Education Expert | 20 |
| **Sherry Wells** | CCME Coordinator | 160 |
| **Emily Jones, Ph.D.** | Postdoctoral Research Associate | 160 |
| **Steve Morey, Ph.D.** | Distinguished Research Scientist | 160 |
| **Richard Long, Ph.D.** | Co-PI, Coastal Intelligence Co-Lead | 26 |
| **Phyllis Gray-Ray, Ph.D.** | Social Science Lead | 42 |
| **Charles Jagoe, Ph.D.** | Faculty advisor | N/A, not budgeted under the award |
| **Elijah Johnson, Ph.D.** | Faculty advisor | N/A, not budgeted under the award |
| **Michael Martinez-Colon, Ph.D.** | Faculty advisor | N/A, not budgeted under the award |
| **Hongmei Chi, Ph.D.** | Big Data Lead | 26 |
| **Richard McLaughlin, Ph.D.** | Principal Investigator | 29 |
| **David Yoskowitz, Ph.D.** | Co-principal Investigator | 21.7 |
| **Paul Montagna, Ph.D.** | Co-principal Investigator | 21.7 |

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|---|---|---|
| **James Gibeaut, Ph.D.** | Co-principal Investigator | 21.7 |
| **Greg Stunz, Ph.D.** | Co-principal Investigator | 21.7 |
| **Jennifer Pollack, Ph.D.** | Faculty advisor | N/A, not budgeted under the award |
| **Michael Wetz, Ph.D.** | Faculty advisor | N/A, not budgeted under the award |
| **Mikell Smith** | TAMUCC CCME Coordinator | 139 |
| **J. Cho, Ph.D.** | Co-principal Investigator | 80 hrs/mo, one summer month budgeted, the rest is leveraged. |
| **Corey Garza, Ph.D.** | co-principal Investigator | 40 hrs/mo, two weeks in summer, rest is leveraged. |
| **Laura Good, Ph.D.** | Education Liaison | 20 |
| **Cheryl Logan, Ph.D.** | CSUMB mentor | N/A, not budgeted under the award |
| **Alison Haupt, Ph.D.** | CSUMB mentor | N/A, not budgeted under the award |
| **James Lindholm, Ph.D.** | CSUMB mentor | N/A, not budgeted under the award |
| **John Goeltz, Ph.D.** | CSUMB mentor | N/A, not budgeted under the award |
| **Ivano Aiello, Ph.D.** | Moss Landing mentor | N/A, not budgeted under the award |
| **Tim Turner, Ph.D.** | Principal Investigator | 5 |
| **Paul Tchounwou, Ph.D.** | Co-Principal Investigator | 1 |
| **Paulette Bridges** | Program Manager | 24 |
| **Ibrahim Farah, Ph.D.** | Co-Investigator | Funded during the summer months |
| **Fenxiang Han, Ph.D.** | Co-Investigator | Funded during the summer months |
| **Ranjani Kulawardhana, Ph.D.** | Co-Investigator | Funded during the summer months |
| **Brent Thoma, Ph.D.** | Co-Investigator | Funded during the summer months |
| **Carlos Cintra, Ph.D.** | Co-Investigator | 50 |
| **Owen Temby, Ph.D.** | Co-Investigator | 50 |
| **Erin Easton Ph.D.** | Postdoctoral Research Associate | 50 |

| | | |
|---|---|---|
| **David Hicks Ph.D.** | Principal Investigator | 50 |
| **John Breier Ph.D.** | Co-Investigator | Leveraged, not budgeted during time frame |
| **Alejandro Fierro Ph.D.** | Co-Investigator | 50 |
| **Leticia Contreras** | Education Liaison | 64 |

***** For each individual listed in this table, additional hours devoted to this award are charged to alternative leveraged funding sources.**

**What other organizations have been involved as partners?**

*Table 5: Federal and State Collaborative Partners*

| Type of Partner Organization: Federal/State | Organization Name: | Location | Partner's Contribution to CCME |
|---|---|---|---|
| Federal | NOAA National MPA Center | Monterey, CA | NERTO Host |
| Federal | Monterey Bay National Marine Sanctuary Office | Monterey, CA | NERTO Host |
| State/Federal | Elkhorn Slough National Estuarine Research Reserve | Elkhorn, CA | Host for thesis research |
| Independent Nonprofit | Woods Hole Oceanographic Institute | WHOI/ UTRGV | Leveraged Training and Research Opportunities for CCME student |
| State | Texas A&M University Corpus Christi | UTRGV | Leveraged Training and Research Opportunities for CCME student |
| Federal | NASA | AMES/ UTRGV | Leveraged Training and Research Opportunities for CCME student |
| State | Texas Parks and Wildlife | UTRGV | Leveraged Training and Research Opportunities for CCME student |
| Federal | NOAA Southeast Regional Office | St. Petersburg, FL | NERTO Host |
| Federal | NOAA AOML | Miami, FL | NERTO Host |
| Federal | NGA | Springfield, VA | Provide research funding, internship and job for CCME student |
| Federal | EPA | DC | Funding for the current CCME students research |
| State | FDEP | Tallahassee, FL | Oversighting of funded research by CCME students |
| State | FWC | Tallahassee, FL | Providing in-kind services and boat hours for CCME students |

**Have other collaborators or contacts been involved? Yes**

*Table 6: External Collaborative Partners*

| External Partner | CCME Lead Partner(s) | Description of Partnerships | Partner's Contribution to CCME |
|---|---|---|---|
| Mak Saito, Woods Hole Oceanographic Institution / Rod Johnson, Bermuda Institute of Ocean Science | John Breier CCME UTRGV | Collaborative research: High resolution nitrogen transformation processes at the Bermuda Atlantic Time series | Leveraged Training and Research Opportunities for CCME student |
| Texas State University | John Breier CCME UTRGV | LLM-PEM: A Predictive Ecological Model for the Lower Laguna Madre | Leveraged Training and Research Opportunities for CCME student |
| Dana Yoerger, Woods Hole Oceanographic Institution | John Breier CCME UTRGV | NSF collaborative project Mesobot: a robot for investigating the ocean interior | Leveraged Training and Research Opportunities for CCME student |
| Mak Saito, Woods Hole Oceanographic Institution | John Breier CCME UTRGV | Collaborative research: High resolution nitrogen transformation processes at the Bermuda Atlantic Timeseries | Leveraged Training and Research Opportunities for CCME student |
| Darlene Lim, NASA AMES/ Chris German Woods Hole Oceanographic Research Institution | John Breier CCME UTRGV | Systematic Underwater Biogeochemical Science and Exploration Analog | Leveraged Training and Research Opportunities for CCME student |
| Texas Parks & Wildlife Department | John Breier CCME UTRGV | Establishing a harmful algal bloom and plankton community composition observing time-series in the Lower Laguna Madre at Brazos Santiago Pass | Leveraged Training, Research Opportunities, and Research Infrastructure for CCME student |
| Charles Jacoby, St. Johns River Water Management District | J. Cho<br>CCME B-CU | Oversight and provide advice for CCME student | Thesis committee members, communication and sharing of data with CCME students |

| | | | |
|---|---|---|---|
| | | research projects | |
| Duane De Freese, Indian River Lagoon National Estuary Program | J. Cho<br>CCME B-CU | Reviewing and executing external grants for CCME student research | Funding agency liaison and director of the NEP program that provides current research funding for CCME student research |
| Florida Department of Environmental Protection (FDEP) | J. Cho<br>CCME B-CU | Funding, external collaborator, field guides for CCME students | Providing external partners of current funded projects; providing guides for field sites, design, and data. Providing funds |
| National Geospatial-Intelligence Agency | J. Cho<br>CCME B-CU | Funding agency and provides internships to CCME students | Sponsored and hired CCME student's research, internship, and job |
| Cities of New Smyrna Beach, Edgewater, Oakhill, and South Daytona | J. Cho<br>CCME B-CU | Collaborators and external partners on funded projects | Providing their properties (e.g. waterfront parks) for research, assist with outreach of the projects/workshops by CCME students |
| Ginger Adair, Volusia County Environmental Management | J. Cho<br>CCME B-CU | Collaborators and external partners on funded projects | Providing in-kind fund and cash matches for projects by CCME students |
| Marine Discovery Center, Environmental Discovery Centers, and Marine Science Center | J. Cho<br>CCME B-CU | Public education and outreach partners | Providing platforms for student engagement with the communities |
| Project H2O and Riverside Conservancy | J. Cho<br>CCME B-CU | NGO consortia of varying organizations from local universities, governments, resource managers, public education, K-12 education | Providing volunteering hours/students |
| Annie Roddenberry, Florida Fish and Wildlife Conservation Commission (FWC) | J. Cho<br>CCME B-CU | Collaborators and external partners on funded projects | Providing in-kind hours and boat times for projects by CCME students |

**Have NOAA collaborators or contacts been involved? Yes**

*Table 7: NOAA Collaborative Partners*

| NOAA Collaborator/Office/Program | CCME Faculty/Student Partner(s) | Description of Collaboration |
|---|---|---|
| Andrew DeVogelaere, Ph.D. | Miya Pavlock-McAuliffe | NERTO Mentor |
| Andrew DeVogelaere, Ph.D. | Lauren Parker | NERTO Mentor |
| Charles Wahle, Ph.D. | Taylor Eddy | NERTO Mentor |
| Michelle Johnston, Ph.D./ National Ocean Service/ Office of National Marine Sanctuaries: Flower Garden Banks National Marine Sanctuary | David Hicks, Ph.D./ Graduate Student Rebekah Hernandez | NERTO internship mentor |
| Scott Large, Ph.D./ National Marine Fisheries Service/ Fisheries Service Northeast Fisheries Science Center | Owen Temby Ph.D./ Graduate Student Anthony Lima | NERTO internship mentor |
| Kim Penn/ National Ocean Service/ Office for Coastal Management | Owen Temby Ph.D./ Graduate Student Cristina Madrid | NERTO internship mentor |
| Christopher Kelble, Ph.D. | J. Cho/Philip Bellamy | NERTO internship mentor/thesis committee |
| Gregory Dusek, Ph.D. | Craig Tinus/Shan Guruvadoo | NERTO internship mentor/thesis committee |
| Bill Arnold, Ph.D. | J. Cho/Mallory Brooks | NERTO internship mentor |
| Cheryl Woodley, Ph.D. | Michael Martinez-Colon/Grad Student Angelique Rosa-Marin | NERTO internship mentor |
| Cheryl Woodley, Ph.D. | Michael Martinez-Colon/Grad Student Margarette Bayron-Arcelay | NERTO internship mentor |

# V. Impacts of Award

**What is the impact on the development of future workforce candidates for the principal discipline(s) of the award and NOAA mission-aligned support of the project?**

A total of 69 students have been recruited to join NOAA CCME in a variety of disciplines including environmental science, technology, and policy, ocean, coastal and earth science, marine sciences, civil and environmental engineering, biology, computer science, and social sciences.

**What is the impact on other disciplines and Program Level Outputs and Outcomes aligned with the 2016 FFO? What is the impact on the development of candidates for the NOAA mission future workforce?**

The impact on candidate development is tracked and measured through the Individual Student Development Plan. Individual Student Development Plans were assessed with CCME Scholars at the end of the Spring 2018 semester (May 2018).

**What is the impact of the Center activities to build institutional capacity in support of the objectives of the NOAA FY16 CSC award?**

During the current reporting period the Center hired a Distinguished Research Scientist as part of the award.

**What is the impact of the NOAA award on the Center's data and information resources? To whom and how is this information and the Center accomplishments communicated?**

Qualified applicants for the Data Communication and Information Manager are currently in review. The communication and data management duties of the Data, Information, and Communication Manager are currently being fulfilled by a coordinator (supported by university funds) assigned to NOAA CCME. Center Management (NOAA CCME Education Lead, Associate and Assistant Directors) also supports this function. NOAA CCME team members utilize sophisticated tracking tools to support data collection in keeping with the implementation of the award. Center Management and Institutional PIs also work closely with our external evaluator for quality assessment and quality control of more extensive data points associated with award activities to track how we are meeting our goals and objectives.

**How has the Center successfully conducted transfer of research results and new technologies in support of NOAA mission-aligned R2X?**

There are no research results or new technologies to report at this time.

**What were the societal impacts of the Center research activities? How were or are the impact results communicated to the general public.**

At this time research activity results are limited. The NOAA CCME website has been developed to feature research developments and disseminate research results within one year of data collection. As results become available they will also be published in research journals and shared in newsletters, presentations at professional conferences and disseminated through public meetings and to key stakeholders with input from the Community Stakeholder Advisory Board and Science Advisory Council.

NOAA CCME management has also had the opportunity to emphasize the importance of NOAA programs to Federal, State and Local officials through yearly visits to Capitol Hill and participation in events such as the FAMU Day at the Capitol.

# VI. Changes / Challenges

**Challenges in performance of the award objectives - approach and reason(s) for change:**

**Actual or anticipated problems or delays and actions or plans to resolve them:**
No anticipated delays anticipated at this time.

**Changes that have a significant impact on expenditures:**
No changes with significant impact on expenditures anticipated at this time.

# VII. Special Award Conditions

1. **EPP/MSI CSC Performance Progress Reports**

NOAA CCME has complied with the requirement that Performance Progress Reports will be provided no later than 30 days following the end of each 6-month period from the start date of the original award. The original submission of the current report occurred on March 29, 2019 in compliance with the special award conditions.

2. **Evaluation Plan for Coastal and Marine Ecosystems Cooperative Science Center See Appendix C**
3. **Required Center Implementation Plan**

The Center Implementation Plan was submitted on March 16, 2017 and has since been reviewed. An Implementation Plan Addendum was submitted to Grants Online (File ID: 2676722) on June 30, 2017 to address further suggestions from EPP. An additional revised Implementation Plan that included the addendum was submitted to Grants Online (File ID: 2650452) on June 15, 2018.

4. **EPP/MSI CSC Substantial Involvement and Collaborative Engagement**

CCME faculty presented two talks in EPP/MSI CSC collaborative sessions at the 2019 American Meteorological Society meeting in Phoenix in January, 2019: “Training for Science that Matters: Integrating Social Sciences at the NOAA Center for Coastal and Marine Ecosystems” (Gray-Ray et al.), and “NOAA CCME Centerwide Competency Course: Student Training to Meet the Demands of an Interdisciplinary Workforce” (Pitter et al.).

CCME, working with NOAA EPP, proposed a session, “Education Partnerships in Coastal and Marine Science” at the 2019 CERF Biennial Conference to feature NOAA Cooperative Science Centers and their collective impact on the NOAA-mission workforce. This session proposal was accepted and CCME has circulated to the other CSCs an invitation to submit abstracts for this collaborative session.

**5. EPP/MSI Direct Student Support, Post-Doctoral Program and Pre-Publication During the reporting**

CCME engages frequently with the NOAA EPP management team through email correspondence and conference calls. The EPP Supervisor Ms. Jacqueline Rousseau, EPP CSCs Program Manager Dr. Audrey Trotman, and co-Technical Monitors Dr. Steve Thur (NOS) and Dr. Chris Kelble (OAR) participate in monthly NOAA CCME calls with the NOAA CCME Center Management Team and Co-PIs to discuss progress updates and upcoming events. In addition to reviewing internship opportunities, the EPP management team has also been substantially engaged in development of the postdoctoral research and mentorship plan. Technical monitor Steve Thur presented a webinar to CCME scholars and faculty on November 26, 2018, entitled "Thoughts on Landing a Job at NOAA: A Hiring Manager's Perspective". Technical monitor Chris Kelble has been engaged with CCME to identify mentors for graduate scholars and a postdoctoral research, and is presently mentoring CCME scholar Brianna Alanis.

**Post-Doctoral Program -**

NOAA CCME Postdoctoral Research Associate Dr. Emily Jones identified her NOAA mentor, Jennifer Doerr (SEFSC Galveston). Working with her mentor, she developed her postdoctoral research and mentorship plan and submitted it for review by the EPP Management Team and subsequent revisions (at the time of this report, the internship plan is submitted to Grants Online).
During this reporting period, NOAA CCME Postdoctoral Research Associate Dr. Erin Easton confirmed her upcoming internship with Dr. Peter Etnoyer (NCCOS Charleston).
**NERTO and Student Internships with NOAA – See Appendix Table 2**

**1. EPP/MSI Center External Evaluator Support on Award Funds Special Award Condition**

For the current reporting period the Center External Evaluator has received $15,000 in support.

**2. NOAA Environmental Data and Information**

Currently, there is are no collected data nor information that have been transferred to a publicly accessible data archive center. Data collected through student research associated with the NOAA CCME will be shared with the public within two years of data collection as described in the CCME Data Management Plan of the award proposal.

**3. New Award Special Award Condition**

This award number NA16SEC4810009, to FLORIDA A&M UNIVERSITY, supports the work described in the Recipient's proposal entitled "NOAA Center for Coastal and Marine Ecosystems" dated March 30, 2016, and revisions dated July 27, 2016 and August 23,2016, which are incorporated into the award by reference. Where the terms of the award and proposal differ, the terms of the award shall prevail.

**4. Multi-Year Special Award Condition**

NOAA CCME recognizes that continued funding of the current award is contingent upon availability of funds. The funding period for this award is 09/01/2016 – 08/31/2019 and may be extended through 08/31/2021.

**X. EPP MSI CSC Programmatic Special Award Conditions**

**CSC Programmatic Special Award Conditions**

**A. Provide FY16 Center award information for:**

1. **Total Number of EPP-funded post-secondary students from underrepresented minority communities** who are trained 61 and graduate 4 in NOAA-mission sciences.
2. **Total number of EPP-funded post-secondary students** who are trained 69 and graduate 5 in NOAA-mission fields relevant to this announcement.

3. **Number of EPP-funded graduates who enter the NOAA mission workforce as hires** by NOAA 0, NOAA contractors 1, NOAA partners 0, resource management agencies 1, NGO community 0, academia 0 or as entrepreneurs 0.
4. **Number of EPP-funded graduates who participate in and complete NOAA agency mission-related postdoctoral level programs** 0.

In Year 3 CCME plans to recruit nine transfer, 18 Master's, and two PhD students.

5. **Total new funds leveraged with NOAA EPP award** (including post-secondary student support)

Total leveraged funding for reporting period: $669,336

**B. Provide FY16 Center award information to demonstrate contribution to supporting CSC Desired Program level Outcomes and Outputs defined in FFO p. 7 - 10, for the current reporting period.**

***Please see Executive summary and Products of Award.***

**5.1 Education and Training**
***Please refer to the Evaluation Plan in Appendix C and the Executive Summary for updates on the following:***

*Outcome 1. Increased number, annually, of CSC post-secondary students, trained.*
Outputs

- Increased quantitative and analytical skills;
- Increased competence in applying STEM to decision making, policy and management; and,
- Increased skills to use large data sets, geographical information systems (GIS) and statistical analysis, computer modeling, and algorithm development.

*Outcome 2. Increased number of CSC post-secondary students educated and graduated annually.*

Outputs

- The number of degrees earned annually in NOAA mission-related disciplines.
- The number of students (total and URM) who participated in professional development opportunities, to include at least one on-site experiential research and training opportunity at a NOAA lab, office, or facility with tangible training and research: (a) for a minimum duration of 4 consecutive weeks, and (b) resulted in a publication or an oral or poster presentation to experts, peers, and/or other stakeholders.

*Outcome 3. Increased CSC capacity to train and graduate students.*

Outputs

- Number of seminars, new courses, new programs, and new degrees offered to develop working skills and functional competencies to support the NOAA mission and workforce.

- Total numbers of students supported by the CSCs and degrees awarded that reflect the changing demographics of the nation (Census Bureau 2014 National Projections, http://go.usa.gov/c2VfP).

*Outcome 4. Reduce the attainment gap for URMs in NOAA mission-relevant fields*

Outputs

- Increased number of URM students in student development activities that will lead them to the attainment of degrees and/or employment in NOAA mission fields.
- Increased number of URM students who select to pursue higher education in NOAA mission fields.

**5.2 Scientific Research**

*Outcome 1. Increased NOAA mission-relevant research capacity at MSIs.*

Outputs

- Number of research collaborations with NOAA and CSC faculty, staff and students.
- Number of NOAA scientists serving as mentors and advisors for student research.
- Number of intra-institutional collaborative partnerships established and maintained in support of NOAA's mission.
- Number of uses of NOAA data in research and tool development.

- Number of inter-institutional collaborative partnerships established and maintained in support of NOAA's mission.

*Outcome 2. CSC-supported faculty, staff and students' research directly aligned with NOAA's mission and strategic priorities.*

Outputs

- Number of peer reviewed publications, presentations, and tools developed by faculty, staff, and students.
- Use of CSC research results and tools by NOAA and other stakeholders.
- Number of instances CSC publications are cited.
- Number of CSC students, staff or faculty recognized nationally for CSC research.

**5.3 CSC Administration**

*Outcome 1. Increased CSC capacity to support and sustain education and research in NOAA mission areas.*

Output

- Amount of funds leveraged with CSC award to support NOAA mission in education and research.

*Outcome 2. Increased engagement by CSCs with the URM communities to enhance the mission workforce pipeline.*

Outputs

- Number of structured activities to recruit and retain students, particularly from URM communities, in NOAA mission-relevant higher education programs.
- Number of MSI inter-institutional collaborative partnerships established and maintained in support of NOAA's mission.

*Outcome 3. To increase communication of CSC accomplishments and capacity*

Outputs

- Number of CSC products used by stakeholders.
- Number of featured articles in print or digital media referencing the NOAA CSC.

*Outcome 4. Increased use of post-secondary education evaluation methodologies*

Outputs

- Number of best practices that are measurable, scalable and transferrable.

- Consistent use of established evaluation practices, including higher education practices, to measure effectiveness of each component of the award.

NOAA CCME will continue development to address all Education and Training Outcomes and Outputs. The Center Faculty and Staff are committed to achieving the goals set forth for the FY16 award to:

Goal 1: Increase the number of well-trained and highly qualified scientists and managers, particularly from under-represented minority groups, entering the NOAA and NOAA-related workforce;

- Goal 2: Enhance the scientific understanding of human interactions with the coastal environment in support of NOAA's place-based management specifically as it relates to the response of coastal and marine ecosystems to natural and human induced stressors;

- Goal 3: Improve the scientific basis for coastal resource management by developing tools and research products to characterize, evaluate, and forecast coastal and marine ecosystem responses to natural and human induced stressors; and

- Goal 4: Facilitate community education and outreach relating to the function and relevance of coastal ecosystems and the services they provide to society.

## Current tools in development:

Angelique Rosa Marin, NOAA CCME Graduate Scholar FAMU and her advisor, Michael Colon-Martinez are working on a bioindicator index which may be implemented by resources managers at the JBNERR.

NOAA CCME UTRGV faculty member Dr. Chip Breier, and collaborators are currently developing and testing AUV and ROV based biochemical and 'omic' sampling tools. We will be reporting on the status of these tools this year and pathways for making use of them

NOAA CCME Distinguished Research Scientist Dr. Steve Morey, and collaborators are developing new global coastal upwelling index databases from satellite-derived winds. This is on-going NASA-funded work, and website is functional now (http://coaps.fsu.edu/products-services/data/upwelling), but will be updated with ongoing modifications. I will also be working on new methodologies for upwelling indices (using multiple variables), and these data products will be served through the website as they are developed.

# Appendix A: Summary Tables

## *Appendix Table 1: NOAA CCME Scholars*

| | CCME Scholar | Degree Level | Cohort | Faculty Advisor(s) | Synopsis Title | Synopsis Presented | Focal Area | Expected NERTO Participation Dates | NOAA/NERTO Mentor's Name or Potential NOAA Mentors or NOAA Office of Interest | NOAA Mission-Aligned Research Project Title (to be determined in collaboration with NOAA mentor) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Alexis Hamilton | B | 1 | Richard Long | – | – | CI | – | – | – |
| 2 | Andrea Pugh | D | 2 | Steve Morey | In development | N | CI | Summer 2019 | Seeking - In discussion with Dr. Jesse Feyen, GLERL | To be developed |
| 3 | Angelique Rosa-Marin | M | 1 | Michael Martinez-Colon | Implementation of the FORAM Index (FI) in coral reefs from Jobos Bay at Puerto Rico | Y | CI | Fall 2019 | Dr. Cheryl Woodley, Research Microbiologist, NOS | Exploring the use of foraminifera as a bioassay organism for coral reef environments for CSC Student |
| 4 | Ariana Uwaibi | D | 2 | Richard Long | In development | N | CI | Spring 2020 | Seeking - CCME will reach out to potential contacts | To be developed |
| 5 | Brianna Alanis | M | 2 | John Breier | Using primary productivity proxies as ecosystem health metrics | Y | CI | COMPLETED: Spring 2019 | Dr. Chris Kelble, AOML | To be developed |
| 6 | Caroline Rodriguez | M | 3 | Cheryl Logan | Physiological responses of corals to temperature stress | Y | CI | Fall 2019 | SSIO in development with Dr. Thomas Oliver, Pacific Islands Fisheries Science Center | To be developed |
| 7 | Devon Preyer | B | 3 | Steve Moore | – | – | CI | – | – | – |
| 8 | Emily Chui | B | 1 | Alison Haupt | – | – | CI | – | – | – |
| 9 | Gabrielle Figueroa | T | 2 | Michael Martinez-Colon and Emily Jones | – | – | CI | – | – | – |

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| 10 | Kennedy Jones | B | 2 | Ranjani Kulawardhana | – | – | CI | _ | _ | _ |
| 11 | Lily Walker | D | 1 | Michael Wetz | Dissolved Oxygen Dynamics in Texas Estuaries | Y | CI | Summer 2020 | Dr. Suzanne Bricker, Physical Scientist and Manager of NOAA's National Estuarine Eutrophication Assessment, NCCOS, Cooperative Oxford Laboratory | To be developed |
| 12 | Margarette Bayron-Arcelay | D | 2 | Michael Martinez-Colon | It takes two to tango: protist and bacteria as bioindicators of estuarine health in FL and TX | Y | CI | 2020 or 2021 | Dr. Cheryl Woodley, Research Microbiologist, NOS | In Development (on water quality) |
| 13 | Melissa Meredith | B | 1 | Cheryl Logan | _ | _ | CI | _ | _ | _ |
| 14 | Nigel Lascelles | M | 1 | Charles Jagoe | Oysters as sentinels of microplastic pollution | N | CI | COMPLETED: June 1 - August 31, Summer 2018 | Dr. Ashok Deshpande, Sandy Hook, Northeast Fisheries Science Center | Chemical Characterization of Microplastics Polymers for CSC Graduate Student |
| 15 | Olivia Boisen | B | 1 | John Goeltz | _ | _ | CI | _ | _ | _ |
| 16 | Patricia Cockett | D | 1 | Paul Montagna | Landscape Connection to Coastal Marine Systems: The Ahupua'a Concept | Y | CI | Summer 2019 | Dr. Randall Kosaki, Papahānaumokuākea Marine National Monument | Human use of the NOAA Hawaii Estuarine Research Reserve (NERR) to quantify the ecosystem service values with respect to recreational use |
| 17 | Prian Vidal | M | 1 | Charles Jagoe and Elijah Johnson | Nitrogen sequestration associated with oyster aquaculture in the Oyster Bay, Aquaculture Use Zone, Wakulla Co, FL | N | CI | Spring 2019 | Dr. Suzanne Bricker, Physical Scientist and Manager of NOAA's National Estuarine | To be developed |

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| | | | | | | | | | Eutrophication Assessment, NCCOS, Cooperative Oxford Laboratory | |
| 18 | Queriah Simpson | M | 3 | Steve Morey and Richard Long | In development | N | CI | Summer 2019 | NERTO project identified – Dr. John Christensen, NCCOS, NOS | To be developed |
| 19 | Ra'Teema Etienne (Stanley) | M | 2 | Hongmei Chi | Predict Florida Beach rip current via Data Analytics Techniques | N | CI | Initial 1-week Training August 20, 2018; NERTO Summer 2019; Start/End Dates TBD | Mike Churma and Dr. Jung-Sum Im, Meteorological Development Laboratory Office of Science and Technology Integration NWS | Rip Current Model Validation |
| 20 | Shan Guruvadoo | M | 1 | Craig Tinus | Investigating causes of changing tidal range and timing in U.S. harbors | Y | CI | COMPLETED: Start Date: August 14, 2017 End Date: November 3, 2018; Completed 12 weeks- Fall 2017 | Drs. Gregory Dusek; Chris Zervas (CO-OPS); Organization - Jena Kent | Investigating causes of changing tidal range and timing in U.S. harbors |
| 21 | Shaquila Rolle | B | 1 | Richard Long | – | – | CI | – | – | – |
| 22 | Summer Martinez | T | 3 | Richard Long | – | – | CI | – | – | – |
| 23 | Terrius Bruce | T | 2 | Steve Morey | – | – | CI | – | – | – |
| 24 | Abraham DaSilvio | M | 2 | J. Cho | Assessment of Storm-water Pollution within a Coastal Urban Canal Basin: A Case Study of Nova-Reed Canal Basin along the Halifax River Estuary, Florida | Y | PBC | Fall 2019/Spring 2020 | AOML Miami, FL | To be developed |

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| 25 | Alexandra Shien-li Thomsen | M | 3 | Arlene Haffa | Evaluating indicators of and factors contributing to restoration success in a large-scale experiment | Y | PBCA | Fall 2019 | Seeking - NOAA engagement needed | To be developed |
| 26 | Anthony Lima | M | 1 | Owen Temby | Inter-agency Cooperation, Policy, and Management of the Gulf of Mexico Fishery | Y | PBC | COMPLETED: June 4th - August, Summer 2018 | Dr. Scott Large, Northeast Fisheries Science Center, NMFS | Evaluating indicators of regulatory complexity to understand the cost of compliance |
| 27 | Cassandra Rodriguez | B | 1 | David Hicks | – | – | PBC | – | – | – |
| 28 | Daniel Flores | B | 3 | Alejandro Fierro Cabo | – | – | PBC | – | – | – |
| 29 | David Lecusay | B | 1 | Carlos Cintra | – | – | PBC | – | – | – |
| 30 | Diana Del Angel | D | 1 | David Yoskowitz | Assessment of Salt Marsh Ecosystem Services in the US Gulf of Mexico | Y | PBC | Spring 2019 (3/11/19 – 5/31/19) | Dr. Rebecca Allee; NOAA Office of Coastal Survey | To be developed |
| 31 | Elizabeth del Rosario | D | 1 | Richard McLaughlin | Environmental Flows Management Strategy for the Coastal Zone in Texas | Y | PBC | Summer 2019 (June 10 - July 28, 2019) | Dr. Trey Flowers, P.E. Director, Analysis and Prediction Division NOAA/NWS/NWC/Office of Water Prediction | To be developed |
| 32 | Elizabeth Murphy | M | 1 | Carlos Cintra | Tracking nitrogen transfer through Black Mangrove (*Avicennia germinans*) communities | Y | PBC | Current Spring 2019 | Dr. Joe Serafy (NOAA/NMFS/SEFSC) in Miami, FL | To be developed |
| 33 | Geramy Perriman | B | 1 | Brent Thoma | – | – | PBC | – | – | – |
| 34 | Harrison R. Watson | B | 1 | Brent Thoma | – | – | PBC | – | – | – |
| 35 | Jada Grant | B | 1 | Brent Thoma | – | – | PBC | – | – | – |
| 36 | Javier Navarro | M | 1 | Alejandro Fierro Cabo | Analysis of the facilitative relationship between *Batis maritima* | Y | PBC | Summer 2019 | Planned – Joe Serafy | To be developed |

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| | | | | | and *Avicennia germinans* seedlings as mangrove restoration strategy | | | | NMFS/SEFSC in Miami, FL | |
| 37 | Jessica Webb | B | 1 | Brent Thoma | _ | _ | PBC | _ | _ | _ |
| 38 | Jonathan Breaux | T | 1 | Brent Thoma | _ | _ | PBC | _ | _ | _ |
| 39 | Julian Venable | D | 2 | Ibrahim Farah/Brent Thoma | Densities and potential impacts of microplastics in Grand Bay National Estuarine Research Reserve | N | PBC | Summer 2019 | Ashok Deshpande NEFSC Habitat Ecology Branch NMFS Sandy Hook, NJ | To be developed |
| 40 | Katia Sanchez | B | 3 | Owen Temby | _ | _ | _ | _ | _ | _ |
| 41 | Keenasha Minor | M | 1 | Fengxiang Han | Analysis of Naturally Occurring Radionuclides in the Northern Gulf of Mexico | N | PBC | Spring 2019 | NOAA mentor: Kate Rose, NCEI, NESDIS | To be developed |
| 42 | Kelsey Martin | D | 2 | Greg Stunz | Characterizing large predatory fish across Gulf of Mexico habitat | Y | PBC | Spring 2021 | Matthew Campbell National Marine Fisheries Service Pascagoula, MS | To be developed |
| 43 | Lauren Parker | M | 1 | James Lindholm | The ecology of organisms on the “lost reefs” of the MBNMS: diver-held video surveys from 20-40 m water depth. | Y | PBC | Completed Fall 2018 | Dr. Andrew Devogelaere, Research Coordinator, Monterey Bay NMS | Meso-photic reefs of the Monterey Bay National Marine Sanctuary |
| 44 | Liyah Smith | T | 1 | Brent Thoma | _ | _ | PBC | _ | _ | _ |
| 45 | Meghan Martinez | M | 1 | Jennifer Pollack | Influence of oyster reef restoration on benthic infauna and reef-associated macrofauna | Y | PBC | Summer 2019 (May 28, 2019 – August 20, 2019) | NOAA Mentor: Dionne Hoskins-Brown NERTO mentor: Eric Weissberger, Ph.D., NOAA National Marine Fisheries Service, | Data needs for planning and assessment of Oyster (Crassostrea virginica) restoration in the Northern Gulf of Mexico under the |

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| | | | | | | | | | Office of Habitat Conservation, Restoration Center, Silver Spring MD | Deepwater Horizon Natural Resource Damage Assessment (NRDA) |
| 46 | Natalie Vaughn | B | 3 | John Olson | – | – | PBC | – | – | – |
| 47 | Riley Young | B | 3 | Corey Garza | – | – | PBC | – | – | – |
| 48 | Rebekah Hernandez | M | 1 | David Hicks | Assessing long-term benthic community dynamics at the Flower Garden Banks National Marine Sanctuary | Y | PBC | COMPLETED: June 2018 - August 2018 | NERTO Mentor: Dr. Michelle Johnston, Research Marine Biologist, Flower Garden Banks National Marine Sanctuary; NOAA mentor: Dr. Emma Hickerson, Flower Garden Banks National Marine Sanctuary | East Flower Garden Bank Photostation Coral Species Identification and Historical Coral Cover Analysis for CSC Graduate Student |
| 49 | Shelby Windham | B | 1 | Brent Thoma | – | – | PBC | – | – | – |
| 50 | Shirlay Alexander | B | 3 | Brent Thoma | N/A | N/A | PBC | – | – | – |
| 51 | Taylor Eddy | M | 1 | Corey Garza | Multiscale habitat use and effects of MPAs on California spiny lobster success | Yes | PBC | Completed Fall 2018 | Dr. Charlie Wahle, Senior Scientist, NOAA National Marine Protected Areas Center | Meta-analysis of West Coast MPA Performance |
| 52 | Victoria Salinas | M | 3 | David Hicks | Growth and Reproduction studies of Black Corals (antipatharians): South Texas | N | _ | Summer 2019 | Seeking - NOAA engagement needed | To be developed |
| 53 | Mallory Brooks | M.S., BCU | 2 | Dr. Hyun Jung (J.) Cho | Evaluating the effectiveness of restored shorelines in mitigating non-point source pollution and climate | Y | PBC | Summer 2018 (completed) | Dr. Bill Arnold, NOAA Fisheries Southeast Regional Office | Implementing Ecosystem-based Management in the U.S. Caribbean |

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| | | | | | impacts in the Mosquito Lagoon, Florida, USA | | | | | |
| 54 | Mariana León Pérez | Ph.D. CMSS, TAMU CC | 3 | Dr. James Gibeaut | Vulnerability of Coastal Social-Ecological Systems to Sargassum Beaching Events | Y | PBC | Summer 2020 (tentative) | pending | pending |
| 55 | Anthony Lima | Ph.D., TAMU CC | 1 | Dr. Richard McLaughlin | Under development, due May 1, 2019 | N | PBC | Summer 2021 or 2022 (tentative) | Seeking a NOAA mentor | Pending |
| 56 | Cristina Madrid | M.A., UTRG V | 1 | Dr. Owen Temby | Disaster Coordination in the Rio Grande Valley | Y | PBC | Summer 2018 (completed) | Kim Penn, Silver Spring, MD at NOAA facility and College Park, MD at the University of Maryland College Park | Gray, Green, and Cultural Infrastructure Solutions to Enhance Coastal Resilience For CSC Student |
| 57 | Miya Pavlock McAuliffe | M.S., CSUM B | 3 | Dr. Rikk Kvitek (CSUMB) & Dr. Tom Connolly (Moss Landing Marine Laboratories) | Quantifying Sediment Transport Along a Rocky Embayed Coastline: The Southern Monterey Bay, CA | _ Y | PBC | Spring 2019 | Dr. Andrew Devogelaere, Research Coordinator, Monterey Bay | Geospatial data collection and visualization to enhance resource manager/scientist collaborations- for EPP CSC student |
| 58 | Samuel Mwenda | M.S., BCU | 1 | Dr. Hyun Jung (J.) Cho | Assessing Treatment Wetland Efficacy and Public Education in Stormwater Treatment Utilizing Native Wetland Plants | Y | PBC | Summer 2019 | Leslie Craig and Dr. Lisa Vandiver, NOAA Fisheries Southeast Regional Office | Identification of cost-effective salt marsh restoration opportunities along the South Atlantic coast |

## *Appendix Table 2: Student Competencies*

| *Coastal Resilience* | *Coastal Intelligence* | *Place-Based Conservation* |
|---|---|---|
| 1. The natural and nature-based infrastructure that address the impact of | 1. The elements of sea-level rise observation networks and their relationship to sea-level rise projections. | 1. The policies and commonly-used decision-making tools that support place-based conservation. |

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| extreme weather on coastal ecosystems and communities. | | |
| 2. The community-based approaches for the preservation, fortification, and enhancement of natural and nature-based coastal infrastructure. | 2. The leading stressors on ecosystem processes and their relationship to ecosystem health. | 2. The relationship between natural, applied, and social sciences and the policies as it pertains to capacity management. |
| 3. The models for community-based approaches for assessing the vulnerabilities and value of proposed solutions relating to the impact of extreme weather and sea-level rise on coastal ecosystems and communities. | 3. Archived, existing, and new data streams that support ecosystems dynamics and research. | 3. Best practices for engaging community stakeholders in addressing specific site-based concerns. |
| 4. The tools used to study natural and nature-based infrastructure that mitigate the impact of extreme weather and sea-level rise on coastal communities and ecosystems. | 4. Widely-used databases and decision-support tools that address coastal hazards. | 4. Broadly-used ecosystems valuation tools and their use in place-based conservation efforts. |
| 5. Integrating models and practices and other decision-making tools for ecosystem-based management. | 5. Best practices for ecosystem assessment and restoration. | 5. The tools used to balance conservation with demand for coastal resource utilization and economic development. |
| 6. Advocating for the accountability of social science in planning and budgeting to enhance coastal community projects. | 6. Demonstrate the use of communication approaches to deliver more effective warnings about coastal resources and coastal hazards. | 6. Understand socio-economic data needs |
| _ | 7. Evaluate a select suite of products and services to confirm the integration and | 7. Engage community stakeholders |

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| | effective use of social science into coastal intelligence research. | |

# Appendix B: Advisory Boards

1. Science Advisory Council Members
2. Community Stakeholder Advisory Board

## Appendix B1: NOAA CCME Science Advisory Council Members

**Chair:** Dr. James Pinckney, Director
Belle W. Baruch Institute for Marine and Coastal Sciences
Marine Ecologist at the University of South Carolina
pinckney@sc.edu; Phone: 803-777-5288

Dr. Jay Pinckney is the Director of the Baruch Institute for Marine and Coastal Sciences at the University of South Carolina. He is also a Professor in the Department of Biological Sciences and the Marine Science Program at USC in Columbia, SC. Dr. Pinckney is a marine ecologist who studies how marine ecosystems work, especially in terms of how they process energy derived from microscopic plants (phytoplankton and microalgae). Most of his work is conducted in estuarine and coastal waters, including the Gulf of Mexico, San Salvador Island in the Bahamas, North Inlet Estuary on the South Carolina coast, and Galveston Bay, Texas.

Council Members

Lisa Gonzalez, President and Chief Executive Officer
Houston Advanced Research Center (HARC)
lgonzalez@HARCresearch.org; Phone: (281) 364-6044

Lisa Gonzalez is the President and Chief Executive Officer of the Houston Advanced Research Center (HARC). She is responsible for the strategic direction of HARC and its research programs which are designed to facilitate sustainable management of air, energy and water resources. She served as Vice President and Chief Operating Officer of HARC from 2012-2016, overseeing the implementation of HARC's 5-year strategic plan, development of HARC's communication strategy, a reorganization of administrative operations and the design and construction of HARC's new green headquarters. In addition to leading HARC, Ms. Gonzalez is active in research focused on the analysis and dissemination of data concerning the health and productivity of Texas Gulf Coast bays, estuaries and watersheds. Her expertise includes analysis of coastal monitoring data sets and the development of indicators and outreach products describing coastal fish and wildlife populations, invasive species, coastal habitats, water quality, freshwater inflows, seafood safety and climate change.

Jenn Eckerle, Deputy Director, Ocean Protection Council
jenn.eckerle@resources.ca.gov; Phone: (916) 654-9055

Jenn Eckerle joined OPC in December 2016. As OPC's Deputy Director, she is responsible for supervising staff and helping set the strategic priorities for coast and ocean policy in California. Before joining OPC, Jenn spent eight years as an ocean policy analyst for the Natural Resources Defense Council, where she conducted technical analysis and developed policy recommendations to advance ocean conservation. Prior to that, she was a coastal program analyst for the California Coastal Commission and the San Francisco Bay Conservation and

Development Commission. Jenn earned an M.S. in Marine Biology from the Florida Institute of Technology and a B.S. in Biology from the University of Vermont.

Dr. Brean Duncan, Ecological Program Integrated Mission Support Services,
brean.w.duncan@nasa.gov; Phone: 321-861-6292

Dr. Brean Duncan is a Geographer/Spatial Ecologist with the Ecological Program at NASA's John F. Kennedy Space Center, Florida. His interests include investigating how anthropogenic influences alter natural terrestrial systems and their maintenance processes with a focus on mimicking the results of natural maintenance processes through land management application. This includes establishing baseline knowledge of resource abundance/distribution/pattern to guide effective land management practices for conserving/maintaining native fire dependent species habitats and favorable demography for their survival. He has considerable experience using remote sensing, geographic information system (GIS), and global positioning system (GPS) technology to design, implement, and automate spatial databases for ecological modeling and spatial analysis. This includes vegetation, landuse/landcover, habitat, fuels, fire event and fire regime mapping/modeling.

Dr. Philip Kramer, Director, Florida Institute of Oceanography,
philipkramer@usf.edu; Phone: 727-553-1100

Philip Kramer joined the Florida Institute of Oceanography as the director in August, 2016. Previously, Phil spent 13 years with The Nature Conservancy (TNC) as a senior scientist initiating and advancing marine conservation efforts in Florida and internationally in more than a dozen countries around the world.

Trained as a tropical marine geologist with a Ph.D. from the University of Miami's Rosenstiel School of Marine and Atmospheric Science, Phil has spent much of his career advancing tropical ecosystem monitoring, management, and restoration of coral reefs and mangroves. He is the co-founder of the Atlantic and Gulf Rapid Reef Assessment Program (AGRRA), which is a widely accepted as the standard scientific monitoring protocol for reefs and currently houses one of the largest databases on coral reef condition (www.agrra.org). He also established the Florida Reef Resilience Program (FRRP) disturbance response monitoring program which continues to collect annual data on the condition of corals during summer bleaching events (www.frrp.org).

## NOAA Employee Members

Dr. LaToya Myles, Deputy Director, NOAA Air Resources Laboratory, Atmospheric Turbulence and Diffusion Division, Oak Ridge, TN,
latoya.myles@noaa.gov; Phone: 865-220-1729

Dr. Latoya Myles' research is interdisciplinary, involving both atmospheric chemistry and environmental science. She measures the exchange (i.e., emission and deposition) of gases and particles between the air and land in coastal and agricultural ecosystems. Many of her measurement studies focus on ammonia (NH3), the most abundant basic gas in the atmosphere and an important part of the biogeochemical cycle. The data collected from these studies is used to improve estimates of air pollution and provide information about the potential impact on human health and the environment.

Dr. Charles Wahle, Senior Scientist, NOAA National Marine Protected Areas Center, Charles.Wahle@noaa.gov; Phone: (831) 645-2703

Dr. Charlie Wahle serves as Senior Scientist in NOAA's National Marine Protected Areas Center. He is a marine ecologist now working at the science to policy interface of ocean conservation. Recently, this work has focused largely on understanding patterns and implications of human uses of the oceans, particularly ocean recreation in marine protected areas. Between 2010-2012, he served on a detail to help create and implement the US National Ocean Policy. Before joining the MPA Center in 2000, Dr. Wahle led NOAA's national science, education and policy programs for the National Marine Sanctuaries and National Estuarine Research Reserves programs, and represented NOAA and DOC on several major interagency conservation initiatives.

**Appendix B2: Community Stakeholder Advisory Board Members**

CCME Community Stakeholder Advisory Board Members

Dr. Charles Jacoby
Supervising Environmental Scientist
Water Resources
St. Johns River Management District

Dr. Ayesha Gray, Director
Grand Bay National Estuarine Research Reserve

Mr. Jace Tunnell, Reserve Director
Mission-Aransas National Estuarine Research Reserve
The University of Texas Marine Science Institute
Estuarine Research Center

Dr. Andrew DeVogelaere, Research Coordinator
Monterey Bay National Marine Sanctuary

Ms. Jenna Harper, Manager
Apalachicola National Estuarine Research Reserve
Environmental Education and Training Center

# Appendix C: Evaluation Summary

**Overview**

The External Evaluator continued to work with Project Director and CMT to advance assessment and evaluation work of CCME. The Evaluator participated in monthly conference calls conducted by the Project Director to share evaluation updates with the Co-PIs. Evaluator made two (2) visits to the FAMU campus to meet with the CMT and to discuss evaluation efforts. The Evaluator conferred with the CMT regarding performance indicators for Year 2. The CMT is working to finalize the Year 2 Evaluation Data Template that the Evaluator will use to complete the Year 2 Evaluation Report.

In August of 2018, the Evaluator held an evaluation conference call with Project Director and Co-PIs to review the Evaluation Performance Indicator Scoring Matrix (Evaluation Appendix 1). During the call the Evaluator reviewed the Performance Indicator Scoring Matrix for Year 2. The team also discussed the scoring weights assigned to each goal for Project Years 1-5 as an integral component of the overall evaluation scheme (below).

| | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|---|---|---|---|---|---|
| **Goa1 1** | **.30** | **.25** | **.30** | **.25** | **.30** |
| Recruitment | (.15) | (.10) | (.10) | (.05) | (.05) |
| Training | (.15) | (.15) | (.10) | (.10) | (.05) |
| Completion | N/A | N/A | (.10) | (.10) | (.20) |
| **Goal 2 (Research)** | **.10** | **.20** | **.20** | **.25** | **.20** |
| **Goal 3 (NOAA Big Data)** | **.10** | **.15** | **.20** | **.25** | **.20** |
| **Key Impact Metrics** | **.50** | **.40** | **.30** | **.25** | **.30** |

The Evaluator will meet with the Project Director and CMT to refine the Year 3 Evaluation Plan and to determine the key steps in preparing for the Year 4 evaluation that will be conducted under the auspices of NOAA EPP.

The Evaluator and CMT continues to advance the CCME assessment and evaluation efforts consistent with CCME Evaluation Timeline (Evaluation Appendix 2).

APPENDIX: NOAA CCME Semi Annual Performance Report
(March 1 - August 31, 2018)
Larry Robinson, Principal Investigator and Center Director

EVALUATION APPENDIX 1: CCME External Evaluation Key Performance Indicator Framework

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **CCME Goal 1 - Recruit, train, and graduate underrepresented minority groups, with the competencies and skills that support NOAA's Education Strategic Plan workforce goals.** | | | | | | | | |
| **Recruitment Performance Indicator** | **Strategic Plan Performance Objectives** | | **CCME Project Goals** | **Measure Type** | **Baselines** | **Target** | **Current Performance level** | **Evaluation Score** |
| | **Objective** | **Number** | | | | | | |
| Number of CCME underrepresented minority undergraduate students enrolled in NOAA-mission related degree programs at partner institutions | Relationships/Partnerships | 1.1 | 1a | Summative | | | | |
| Number of CCME underrepresented minority graduate students enrolled in NOAA-mission related degree programs at partner institutions | Relationships/Partnerships | 1.1 | 1a | Summative | | | | |
| Number of total budgeted underrepresented minority Post Docs recruited into the CCME | Relationships/Partnerships | 1.1 | 1a | Summative | | | | |
| Total number of CCME students recruited and enrolled in NOAA mission-related degree programs at partner institutions | Relationships/Partnerships | 1.1 | 1a | Summative | | | | |
| **Mean Effectiveness Score (Recruitment) =** | | | | | | | | |
| **Training Performance Indicator** | **Strategic Plan Performance Objectives** | | **CCME Project Goals** | **Measure Type** | **Baselines** | **Target** | **Current Performance level** | **Evaluation Score** |
| | **Objective** | **Number** | | | | | | |
| Percentage of total CCME students receiving center wide core competency (CWCC) short course certification | Education and Outreach | 1.2 | 1c | Summative | | | | |
| Number of CCME students who have participated in experiential opportunities at a NOAA Lab, office, or facility (i.e., NERTO or SSIO) | Education and Outreach | 1.1 | 1a | Summative | | | | |
| Number of participants of the GIS Activities | Educational Training | 1.1 | 3b | Summative | | | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Percentage of students with the required GPA in NOAA related degree programs at partner institutions | Educational Training | 2.5 | 1a | Summative | | | | |
| Percentage of students demonstrating learning gains in the competencies related to the CCME Focus Areas | Education and Outreach | 1.2 | 1.c | Summative | | | | |
| Percentage of students demonstrating learning gains in competencies related to social science integration | Education and Outreach | 1.2 | 2a,b,c | Summative | | | | |
| Number of invited or refereed presentations or publications by CCME scientists | Educational Training | 1.1 | 1a | Summative | | | | |
| Number of NOAA scientists and experts working in collaboration with CCME students and faculty | Research | 3.1 | 1.d | Summative | | | | |
| **Mean Effectiveness Score (Training) =** | | | | | | | | |
| **Program Completion Performance Indicator** | **Strategic Plan Performance Objectives** | | **CCME Project Goals** | **Measure Type** | **Baselines** | **Target** | **Current Performance level** | **Evaluation Score** |
| | **Objective** | **Number** | | | | | | |
| Number of CCME underrepresented minority students accepted into postdoctoral level programs | Educational Training | 2.3 | 1b | Summative | | | | |
| Number of underrepresented minority students who graduate in NOAA-mission sciences annually | Educational Training | 2.2 | 1a | Summative | | | | |
| Number of CCME students hired by NOAA, NOAA contractors, and other natural resource and science agencies at the federal, state and local levels | Educational Training | 2.4 | 1b | Summative | | | | |
| **Mean Effectiveness Score (Program Completion) =** | | | | | | | | |
| **Mean Effectiveness Score (Goal 1) =** | | | | | | | | |
| | | | | | | | | |
| **CCME Goal 2 - Conduct research leading to the development of management and communication tools that can be utilized to enhance the resilience of coastal communities and economies.** | | | | | | | | |

APPENDIX: NOAA CCME Semi Annual Performance Report
(March 1 - August 31, 2018)
Larry Robinson, Principal Investigator and Center Director

| Performance Indicator | Strategic Plan Performance Objectives | | CCME Project Goals | Measure Type | Baselines | Target | Current Performance level | Evaluation Score |
|---|---|---|---|---|---|---|---|---|
| | Objective | Number | | | | | | |
| Percentage of CCME students earning required quality rating on faculty-mentored research projects | Personnel | 1.1 | 2a,b,c | Summative | | | | |
| Number of NOAA scientists serving as research mentors and advisors for student research | Personnel | 3.2 | 1a | Summative | | | | |
| Number of total CCME scientists establishing research collaborations with NOAA specialists and scientists | Research | 3.1 | 2a,b,c | Summative | | | | |
| Number of CCME faculty and staff who publish their NOAA mission-related research findings in peer-reviewed journals | Educational Training | 1.1 | 2a,b,c | Summative | | | | |
| Number of CCME students who publish their NOAA mission-related research findings in peer-reviewed journals | Educational Training | 1.1 | 2a,b,c | Summative | | | | |
| Number of management and communication tools (models, datasets, etc.) developed in alignment to CCME sponsored research | Personnel | 2.1 | 1a | Summative | | | | |
| Number of citations referencing use of CCME developed tools | Personnel | 1.1 | 2a,b,c | Summative | | | | |
| Number of citations referencing CCME sponsored research or publications | Personnel | 1.1 | 2a,b,c b | Summative | | | | |
| Number of CCME students, staff, or faculty recognized nationally for NOAA-mission relevant research | Personnel | 3.1 | 2a,b,c | Summative | | | | |
| Total number of NOAA mission-related research projects conducted by CCME scientists | Personnel | 3.1 | 2b | Summative | | | | |

| **Mean Effectiveness Score (Goal 2) =** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |
| **Goal 3- Develop competencies and skills in the utilization of new and existing "big data" archives in decision support tools that promote the vibrancy of coastal and marine ecosystems.** | | | | | | | | |
| **Performance Indicator** | **Strategic Plan Performance Objectives** | | **CCME Project Goals** | **Measure Type** | **Baselines** | **Target** | **Current Performance level** | **Evaluation Score** |
| | **Objective** | **Number** | | | | | | |
| Number of student participating in the CCME Big Data Bootcamp | Personnel | 2.1 | 3a | Summative | | | | |
| Percentage of students demonstrating learning gains as a result of CCME training relative to the use of NOAA large data sets | Personnel | 2.1 | 3a | Summative | | | | |
| Number of CCME submissions of new data to enhance NOAA-relevant data sets | Personnel | 2.3 | 3a | Summative | | | | |
| Number of CCME sponsored research project that make use of NOAA large data sets | Personnel | 2.1 | 3b | Summative | | | | |
| Number of CCME sponsored authorized users of NOAA-related databases | Personnel | 2.1 | 3b | Summative | | | | |
| Number of NOAA scientists and managers engaged in CCME large data projects | Research | 3.1 | 1.d | Summative | | | | |
| **Mean Effectiveness Score (Goal 3) =** | | | | | | | | |
| | | | | | | | | |
| **CCME Overall Impact Indicators** | | | | | | | | |
| **Performance Indicator** | **Strategic Plan Performance Objectives** | | **CCME Project Goals** | **Measure Type** | **Baselines** | **Target** | **Current Performance level** | **Evaluation Score** |
| | **Objective** | **Number** | | | | | | |
| Number of CCME-funded post-secondary students who are trained and graduate in NOAA mission-related sciences | Educational Training | 2.2 | 1a | Summative | | | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Number of CCME-funded post-secondary underrepresented minority students who are trained and graduate in NOAA-mission sciences | Educational Training | 2.2 | 1a | Summative | | | | |
| Number of CCME graduates hired by NOAA, NOAA contractors, NOAA partners, or resource management agencies, or academia or as entrepreneurs | Educational Training | 2.4 | 1b | Summative | | | | |
| Number of CCME graduates who participate in and complete NOAA mission-related post-doctoral level programs | Educational Training | 2.4 | 1b | Summative | | | | |
| Number of scholarly publications (peer-reviewed, reports to community groups and coastal decision-makers) and presentations (scientific, agency, inter-agency, local) | Personnel | 1.1 | 1b | Summative | | | | |
| Funds leveraged with NOAA EPP award (including post-secondary support) | Research | 2.1 | | Summative | | | | |
| Total number of NOAA mission-related research projects conducted by CCME scientists | Personnel | 3.1 | 2b | Summative | | | | |
| Number of CCME research projects, theses, and dissertations that include human dimension components | Personnel | 3.1 | 2a,b,c | Summative | | | | |
| Number of CCME students that have research projects, theses, and dissertations committees that include social scientists | Personnel | 3.1 | 2a,b,c | Summative | | | | |
| Number of research collaborations with NOAA and CCME student, faculty, and staff | Research | 3.1 | 2a | Summative | | | | |
| Number of partnerships established and maintained in support of NOAA's mission | Research | 3.2 | 2b | Summative | | | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Number of NOAA scientists and experts working in collaboration with CCME students and faculty | Research | 3.1 | 1d | Summative | | | | |
| **Mean Effectiveness Score (CCME Overall Impact) =** | | | | | | | | |
| **OVERALL MEAN EFFECTIVENESS SCORE =** | | | | | | | | |

EVALUATION APPENDIX 2: CCME Evaluation Activity Timeline

| Evaluation Activity | | Project Year 1 | | | | Project Year 2 | | | | Project Year 3 | | | | Project Year 4 | | | | Project Year 5 | | | | Closeout |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | |
| **Planning** | CMT Evaluation Planning and Update Conference Call | | | X | X | X | | X | | X | | X | | X | | X | | X | | X | | |
| | Review/Revise Logic Model | | | X | | | | | | X | | | | | | | | | | | | |
| | Review/Revise CCME Comprehensive Evaluation Plan | | | X | | | | | | X | | | | | | | | X | | | | |
| | Develop Focus Group Protocol | | | | X | | | | | | | | X | | | | | | | | | |
| | Draft Perception Surveys | | | | X | | | | | | | | X | | | | | | | | | |
| | Internal Evaluation Team Conference Call | | | X | X | | X | | X | | X | | X | | X | | X | | X | | | |
| **Site Visits** | Review/Refine Site Visit Protocol | | | X | X | | | | | | | | | | | | | | | | | |
| | Site 1 Site Monitoring Report Due to Evaluator | | | | X | | | | X | | | | X | | | | X | | | | X | |
| | Site 1 On-site Visit | | | | X | | | | X | | | | X | | | | X | | | | X | |
| | Site 2 Site Monitoring Report Due to Evaluator | | | | X | | | | X | | | | X | | | | X | | | | X | |
| | Site 2 On-site Visit | | | | X | | | | X | | | | X | | | | X | | | | X | |
| | Site 3 Site Monitoring Report Due to Evaluator | | | | X | | | | X | | | | X | | | | X | | | | X | |
| | Site 3 On-site Visit | | | | X | | | | X | | | | X | | | | X | | | | X | |
| | Site 4 Site Monitoring Report Due to Evaluator | | | | | X | | | | | X | | | | X | | | | X | | | |
| | Site 4 On-site Visit | | | | | X | | | | | X | | | | X | | | | X | | | |
| | Site 5 Site Monitoring Report Due to Evaluator | | | | | X | | | | | X | | | | X | | | | X | | | |
| | Site 5 On-site Visit | | | | | X | | | | | X | | | | X | | | | X | | | |
| | Site 6 Site Monitoring Report Due to Evaluator | | | | | X | | | | | X | | | | X | | | | X | | | |
| | Site 6 On-site Visit | | | | | X | | | | | X | | | | X | | | | X | | | |

| | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Perception Data** | Distribution of CCME Student Survey | | | X | | | | X | | | | X | | | | X | | | | X | | |
| | Distribution of CCME Faculty/Staff Survey | | | X | | | | X | | | | X | | | | X | | | | X | | |
| | Distribution of CCME Administrative Questionnaire | | | | | X | | | | X | | | | X | | | | X | | | | |
| | Conduct CCME Student Focus Group Discussion | | | | X | | | | X | | | | X | | | | X | | | | X | |
| | Conduct CCME Faculty Focus Group Discussion | | | | X | | | | X | | | | X | | | | X | | | | X | |
| **Reporting** | CCME Mid-Year Status Report Due to Evaluator | | | | | | X | | | | X | | | | X | | | | X | | | |
| | Submission of Mid-Year Evaluation Report | | | | | | | X | | | | X | | | | X | | | | X | | |
| | CCME Annual Status Report Due to Evaluator | | | | X | | | | X | | | | X | | | | X | | | | X | |
| | Submission of Annual Evaluation Report to CMT | | | | | X | | | | X | | | | X | | | | X | | | | X |
| | 2-Day Annual Evaluation Meeting with CMT and Lead PIs | | | | | X | | | | X | | | | X | | | | X | | | | |
| | Focus Area Progress Report Due to Evaluator | | | | | | X | | | | | | X | | | | | | | | X | |
| | Submission of Interim 3rd-Year Evaluation Report | | | | | | | | | | | | | | X | | | | | | | |
| | Submission of Summative 5th Year Evaluation Report | | | | | | | | | | | | | | | | | | | | | X |

# Appendix D: CCME Scholar CHOW Summaries

**CHOW Experience, NOAA CCME Graduate Scholar Samuel Mwenda**

Attending the 2018 Capitol Hill Ocean Week (CHOW) conference representing the Center for Coastal and Marine Ecosystems (CCME) was an honor as well as an enlightening experience. The speakers, panels, and sessions sought to bring to the fore every pertinent topic relating to oceans. Convened by the National Marine Sanctuary Foundation, the theme this year was focused more on how innovative partnerships lead to more effective change. From media to private equity firms, the core principle was initiating conversations that lead to policy results. Held from the 5th to the 7th of June, this year was the first that separate multiple sessions occurred concurrently. This enabled participants to attend focal areas of importance to current or future research as well as make connections to leaders in the field.

Arriving the first day, the conference began with opening remarks from the president of the foundation Kris Sarri. She spoke of how important it is in these times to persuade politicians and pursue policies that replenishes natural resources in oceans. Ms. Sarri also elaborated on how conferences such as CHOW paved the way to helpful legislation by bringing together scientists, policy makers, industry, and the general public. After her remarks, Julie Lawson a representative for the District of Columbia (D.C.) Mayor's office presented Ms. Sarri with a decree declaring June 5th Ocean Day. She then proceeded to speak, illuminating how the Mayor's administration was committed to marine issues through various projects conducted around the city.

The first panel was centered on media as it brought together producers and influencers. Common themes that were transferrable across various fields included personalization, accessibility, and comedy. These not only capture the intended audience through intimate connections but then achieve the intended goal by education of the issues. They ended by stating that the best way to move policy forward from its current state was to bridge differing opinions from various stakeholders. The first session attended was adaptive management for shifting populations which were sponsored by the International Fund for Animal Welfare. Most of the conversation centered around wild and fishery population in the Northeast as well as the Mid-Atlantic. Congresswoman Pingree discussed problems her home state of Maine, where the lobster industry is a $1-billion-dollar market. Warming waters resulting from climate change forces marine populations to move further north which impact the economic vitality of coastal communities. Additionally, this burdened neighboring states, who had to adjust to shifting populations not originally native to those areas. Recommendations included comprehensive management in all relevant scales from local entities to national bodies.

During lunch the group met and had the opportunity to converse with Dr. Christopher Moses as well as Dr. Steven Thur. The conversation turned to what each scientist did at the National Oceanic and Atmospheric Administration ((NOAA) and how they ended up in their positions. Advice on how to market ourselves and offering realistic expectations about working with the agency, dominated the conversation during lunchtime. Both inquired about the nature of our research and what we wanted to do with it in the future which tied into our career goals.

The group attended the keynote address immediately after lunch. The speaker was the director of NOAA, retired U.S. Rear Admiral Dr. Tim Gallaudet. The speech covered potential impacts of climate change as well as the economic benefits of protecting marine and estuarine areas. Benefits include more food, increased trade, and healthier ecosystems. The majority of the time was spent touting how the administration was a strong partner in shoring up dollars for conservation/protection efforts.

Subsequently, I ambled to the next session that discussed cultural connections and the environment. The session started off defining what culture meant to each of the panelists. The most interesting interpretation to me stated that culture meant empowerment and involved the power of storytelling. The values associated with culture need to be able to adapt in a rapidly changing environment. Recommendations on how to efficiently stitch culture and the environment included working with the youth to shape their ideals. By helping them forge a connection to the environment, the new generation when in power will be informed by their values as they decide policy. It was described as using the most important resource to protect our most endangered resource. Other recommendations included finding new ways to transmit information and harnessing local knowledge to greater effect. Midway through, the panel was interrupted by a member of congress coming to discuss his platform and how that related to culture. The main takeaway was that unlike most policymakers, he made an effort to consider disproportionate effects to underserved communities.

The next day, the session selected was the Gulf Coast Restoration panel. Most of the discussion centered on how to remedy the effects being felt and mitigate the damage currently occurring. Conserving and restoring wetlands damaged by dredging was a big topic. Millions of acres continue to be lost as sediments and silt do not accrue quickly enough. The accretion process had been impacted due to modified hydrological patterns. By extension, the frequent flooding combined with climate change have irrevocably altered the way of life for numerous communities, many indigenous along the coast. Additionally, the probability of stronger storms due to warmer oceans also was broached. The case study was Houston. Katrina was introduced as a catalyst for change and panelists discussed what they took away from that event. The state that everyone focused on was Louisiana.

Following that I attended the Market Based Solutions sessions. I expected more out of the session than I thought I received. The two panelists I gravitated to were the representative from Sea World and the entrepreneur. Those two gave the most cogent answers in my opinion. Ms. Flumerfelt from the Monterey Fisheries Trust had very good insight when it came to public-private partnerships, however the other two gave examples of possible market bases solution from their experience.

During the course of the conference Dr. Moses introduced us to so many NOAA employees and affiliates. We met two former sea grant fellows, one of whom was also a Knauss fellow. There was an opportunity to meet several scientists as well as groups from Florida such as the Scubanauts. The last day was where everything came to fruition. We employed the tactics taught to us to cajole and persuade congressional staffers while also making contacts with fellow environmental groups. Everyone attended Hill Day where we listened to a quick panel from activists on how to capture and retain the attention of congressional staffers. We practiced our two-minute pitches and then thrusted into the unknown. First, we traveled to the office of

Senator Marco Rubio where we conversed with his page assigned to environmental issues. It went fairly well. He mentioned specific policies that either Sen. Rubio had crafted or supported that showed his commitment to the environment. Following that meeting we met with a staffer from the office of Senator Feinstein who didn't really give specifics on what legislation that either they sponsored or supported. The best meeting that we had as a group probably came with staffers representing Senator Wicker from Mississippi. They were engaged and passionate about the ocean especially considering the state borders the Gulf of Mexico. We also spoke with staffers representing Senators Ted Cruz & Kamala Harris.

Overall, the event was entertaining, informative, and rewarding. It was heartwarming to meet so many people that were equally as passionate about marine issues as the CCME cohort. Moreover, it was amazing to talk with everyone at the booths that sacrificed their time to come and present. From the Department of the Interior, the National Oceanic and Atmospheric Administration (NOAA), and the Littoral Society, everyone was welcoming and gracious. My hope is that as NOAA CCME and the other NOAA CSCs grow that many more students will have the chance to experience our nation's capital as change agents and future scientists.

**CHOW Experience, NOAA CCME Graduate Scholar Taylor Eddy**

Capitol Hill Ocean Week (CHOW) was very educational and helped me develop my networking skills. Throughout the conference there were many opportunities to speak with many people in different fields within marine science including policy makers, environmental agencies, and activists. I have never been to a policy-centered conference and before doing research prior to the conference, I expected it to be mostly science-based talks about policy, but I was excited to see that there was quite a diverse group of speakers that would attend. The talks ranged from science-based policy, to things like how to use art to communicate science.

The first day of CHOW started with a panel of distinguished artists and conservationists including Mark Brownlow from BBC's Blue Planet II, Asher Jay who is a 'Creative Conservationist', John Tartaglia creator of Splash and Bubbles, and Jim Toomey creator of 'Sherman's Lagoon'. This panel discussed how to best communicate scientific issues to the public. Having just taken a course in scientific communication, I was able to relate what I learned in that class to what the speakers were talking about. Both the course and the talk emphasized the importance of making a connection to your audience. In the talk, Asher Jay summarized it very well saying you must speak to the public's emotions. If you can get them to feel something, to make that emotional connection, they will be receptive to the message you are conveying. In Blue Planet II, Brownlow uses footage of mother and child walruses to show the effect of global warming. Most of the public can relate to the relationship between parent and offspring, and he uses this emotion to convey the urgency of the issues.

The second session was a breakout session where attendees could choose from three different panels to attend. This was a new addition to CHOW this year, and I believe it was a great idea. It allowed us to tailor the conference to what we are most interested in and get the most out of the conference. I attended the panel titled "Adaptive Management for Shifting Populations". This was the most relevant to my thesis which relates to the efficiency of Marine Protected Areas. They discussed how, as the ocean is warming, there is a shift in species ranges. With these changes, fishermen are finding species that they don't have permits to catch, and they

can't fill their catch quotas. The panelists discussed different approaches to consider when managing species as their ranges shift. It was very informative and interesting to hear the innovative ways being considered to manage the species.

During our lunch break, we had the pleasure of meeting with Dr. Chris Moses from OAR and Dr. Steve Thur from NOS. We were able to discuss how to take advantage of networking opportunities, how to navigate finding jobs within NOAA, and their own paths of how they got to where they are today. Dr. Moses and Dr. Thur introduced us to various people within NOAA as well as some current and former Sea Grant fellows.

We started the second half of the day hearing from RDML Timothy Gallaudet about how NOAA will support the ocean economy. After that, there was another break out session, in which I attended the talk about offshore aquaculture. It was interesting to hear from people that were business majors, that learned about how important the ocean is for providing protein to the world, and they developed businesses from this idea. We heard about their path to where they are now, and the challenges they faced with their aquaculture businesses. They do believe that businesses like these offshore aquaculture farms will be the future of fish and no matter how many obstacles they ran into, they kept going because they knew there would be a great payoff in the long run.

The second day was filled with more great sessions, including "The Value of Protected Places" which was my favorite session of the week. In this one, the panelists discussed how to put a value on a protected place. The panel was comprised of speakers from many different backgrounds, including a catch-and-release fishing boat captain, the outdoor programs manager of REI, the co-founder of a non-profit where Special Ops veterans help with coral reef restoration, and the director of Sound Seas. With the different backgrounds came different perspectives of how valuable our world's protected areas are, and it made for a lively discussion. It is impossible to put a dollar value on protected areas because they offer so much more than just economic gain. Every person that goes outside and truly experiences these protected areas makes a new connection, and they can share these stories and experiences with their friends now, as well as with future generations. The goal of protected areas should be to preserve a variety of different and diverse ecosystems for the future generations to be able to tell their own stories of the natural world.

The last day of the conference was the first "Hill Day" where we were encouraged to meet with our senators and representatives. This was the first time CHOW had facilitated this kind of event and from what I saw, it seemed to be a great success. We started off the morning in a discussion about how to approach a meeting with a member of congress and some talking points to discuss. This was very helpful as I have not had the opportunity to formally discuss policy at the Hill, and I had no idea where to start. We practiced our talking points with our table mates which made me less apprehensive to meet with my senators. For the NOAA CCME students that could make it, we found each of our states senate offices. We were able to have group discussions with a few of our senator's aides that handle ocean policy. As the day went on and we had a chance to practice our talk and hear our peers lead their discussions with the aides, it got easier and felt more natural. Being from California, I was able to talk to one of Dianne Feinstein's aides and she was very receptive, and eager to hear about my research. I specifically

discussed how some upcoming legislature about marine protected areas will have ecological and economic effects in the very near future if passed.

Overall, this was a very different kind of conference from what I have previously experienced, and I felt I was able to further develop my networking skills, and I learned a lot about the world of ocean policy. Having the opportunity to attend this conference, especially being able to talk with the senate aides about ocean policy made me more confident in my place in the field of ocean science, and in my ability to understand and discuss ocean policy issues related to my work in a formal setting.

**CHOW Experience, NOAA CCME Undergraduate Scholar Julian Venable**

My experience at this year's Capitol Hill Ocean Week (CHOW) was both intriguing and exciting. Throughout my first year with NOAA CCME, I have obtained remarkable networking opportunities and learning experiences. As a first year PhD student, it was indeed a pleasure to attend CHOW in Washington, D.C. Without a doubt, attending this conference is certainly one of my greatest achievements. I was able to hear many viewpoints about ocean pollutions and the many ways to solve these problems. As an Environmental Science PhD student at Jackson State University working with microplastics, I found the seminars to be very beneficial regarding my research interest.

On the first day of the conference, I had the pleasure of meeting two of NOAA CCME Technical Monitors, Dr. Chris Moses of NOAA Oceanic and Atmospheric Research (OAR) and Dr. Steve Thur, Director of National Center for Coastal Ocean Science (NCCOS/NOS). We discussed our interest in the marine sanctuaries and how my research at Jackson State University is helping with NOAA's mission. While speaking with Dr. Thur, I informed him that my research interest deals with microplastics in the oceans and he was able to put me in contact with a chief scientist in NOAA's Marine Debris program. The networking opportunities were priceless!

After meeting with both Dr. Thur and Dr. Moses, I attended a panel discussion titled, "Igniting Ocean Conservation through Media and Art", which gave me a deeper understanding of ocean conservations. It centered around increasing the audiences understanding of the oceans and how the environment is affected. Additionally, John Tartaglia, an actor-puppeteer from the children's show, "Splash and Bubbles", discussed why he chose to gear his message towards elementary students. Mr. Tartaglia voiced that he believes it is better to start exposing children to the oceans while they are young. He stressed how a lot of sea creatures go unnoticed in the world even though they play an integral role in the oceans. Another speaker who sparked my interest was a creative conservationist, Asher Jay. She uses visual media through her artwork to ignite one's interest in marine science. I think this is wonderful because some people are visual learners. Ms. Jay has been successful with changing society's viewpoints on sea creatures and on pollution within the environment.

On the second day of the CHOW conference, I chose to attend "The Gulf Coast Restoration" because my research focuses on microplastics and is based in the Gulf of Mexico. I was interested in learning about the Gulf of Mexico's ecosystem and the connection between natural disasters and rebuilding natural coastal barriers. Afterwards, I visited discussion tables

and engaged in conversations with various agencies regarding how to protect ocean life. Each agency representative distributed flyers and packets summarizing the objectives of their agency.

On the last day, my fellow NOAA CCME Scholars and I, went to Capitol Hill to speak with our State Representatives and Senators. We went to the locations of our state Senators to discuss our concerns about the oceans and what is being done to solve the issues at hand. Even though our Senators were absent due to meetings, we were still able to speak with their aides who assured us that our message would be on the desk of the Senators once their meetings concluded. CHOW was such an awesome experience for me and I am honored to have been chosen to attend this conference!

**CHOW Experience, NOAA CCME Graduate Scholar Margarette Bayron-Arcelay**

In Spring 2018, I was admitted into the Ph.D. program in Environmental Science at Florida A&M University (FAMU) and awarded the NOAA CCME Fellowship. The NOAA CCME program has offered me tremendous opportunities for me to grow as a graduate student and a professional. One of the many opportunities was letting me participate in the Capitol Hill Ocean Week (CHOW), 2018. This event included panels on various topics related to pressing ocean issues shared by experts and opinion leaders across the country and around the world. These panels were divided into four topics: Vision for Our Oceans and Great Lakes, Restoration of Marine and Great Lake Ecosystems, Our Changing Ocean and Working Together for Sustainable Waters.

During the CHOW, I attended various panels within these four topics. Given that these panels were composed of people with different backgrounds (i.e., activists, civilians, policy makers, scientists, among others), it gave me insight on the different points of view that exist on important ocean issues. For instance, in the panel, “Igniting Ocean Conservation through Media Art”, we heard how a series producer, a creative conservationist, an actor-puppeteer and a cartoonist engage the public (i.e., non-scientific community) to create awareness of marine conservation. Each one of them engages the public differently based on their professional background; the creative conservationist takes real-time picture of important issues regarding ocean conservation (i.e., overfishing) and integrates it with culturally popular icons to make a connection with the public and create awareness. All the panels, during the CHOW follow the same dynamic.

As a student scientist, hearing viewpoints of different professionals on several topics makes you aware of other important factors that may be passed unnoticed such as connecting with the community in your research area. For instance, in the panel, “The Value of Protected Places” we could understand that conserving a place is not only important for the sake of a rare species, but protected places can also have a special significance and great value to societies, ecologically, economically and culturally. Thus, both the organisms that live within the ecosystem and the human community around it are important factors to consider when talking about protected areas.

In addition, to being able to hear different points of view from different professionals about pressing ocean issues, attending the CHOW also gave me the opportunity to network with different important agencies such as the Environmental Protection Agency (EPA) and U.S. government officials. During my navigation through the booths, I was able to exchange emails and establish professional connections that will help me in the present and future endeavors. Overall, CHOW was an excellent learning and professional growth opportunity.

**CHOW Experience, NOAA CCME Graduate Scholar Meghan Martinez**

CHOW was my first policy-oriented conference, and it was an exciting opportunity to be chosen from my institution to attend the event. There were familiar faces from the Center of Coastal and Marine Ecosystems (CCME), as well as attendees from this year's National Oceanic and Atmospheric Administration (NOAA) Educational Partnership Program (EPP) Forum, such as keynote speaker, RDML Tim Gallaudet who presented the administration's priorities to support our "blue" economy at CHOW. These included goals such as the contribution to doubling the current economic contributions of the U.S. economy over the next decade via sea food production, competitiveness, and sustainability, maritime vessel safety and efficiency to bolster commerce, making maps of the ocean floor available to private industry for exploration, development of renewable and nonrenewable offshore energy sources, and the increase of ecotourism and outdoor recreation.

The sessions that were presented at the conference were both informative and thoughtful in the panelists that were chosen to bring insight and perspective into the varying marine issues that we are facing, both as a nation and globally. This included universal themes such as conservation of marine resources in the face of climate change and increasing populations. I attended sessions that were applicable to my research and interests such as the 'Gulf Coast Restoration', that addressed how restorative efforts, ecosystem services, and social-behavioral-economic information may be used to improve management of our ecosystem's resources. I also attended sessions whose topics were less familiar to me and yet proved to be inspiring, such as the 'Igniting Ocean and Conservation through Media and Art' where the focus was education and outreach for the public through diverse forms of visual media. The breakout sessions were a great way to meet new people and keep the discussion's going after an interesting session. We met with the Director of the National Centers for Coastal Ocean Science (NCCOS), Dr. Steve Thur, as well as Dr. Christopher Moses of the Office of Oceanic and Atmospheric Research (OAR). We were introduced to Jonathan Pennock, the Director of the National Sea Grant College Program, John Armor, the Director of Office of National Marine Sanctuaries, as well as Knauss and Sea Grant fellows. I also networked and exchanged business cards with people that represented different agencies/organizations and interests during the entirety of the conference.

During the last day of the event, 'Hill Day', we had the opportunity to meet with the staff of our U.S. State Senators and voice our concerns and encourage continued support for both the national and local environmental issues that are important for marine and Great Lakes policy and conservation efforts. The CCME cohort decided to represent the center with unity, by approaching the offices of our respective U.S. Senators (Ted Cruz & John Cornyn for the state of Texas) as a group. We visited various Senate office buildings and met with the staff of the state's our group represented (Texas, California, Mississippi, Florida). The conversations that took place with every office and staff member proved to be interactive and well-received with genuine interest in the priorities and issues that were addressed during CHOW. During my free time, I travelled around the D.C. area and visited the National Museum of Natural History, and the Smithsonian National Zoo, which were both enriching cultural experiences.

Overall, this event highlighted the importance of establishing and maintaining relationships of those around us, because so much more can be accomplished when we work together to come up with solutions for real issues. Both policy and scientific research must work hand-in-hand to bring about the improvements we are seeking to make for the conservation of our resources, economic development, and scientific advancement. We also need to continue the dialogue with our local government and continue to push for the changes we wish to see within our communities. I am grateful for the experience as well as the opportunity to represent the NOAA CCME and Texas A&M University - Corpus Christi at this national event.

**CHOW Experience, NOAA CCME Graduate Scholar Abraham DaSilvio**

Capitol Hill Ocean Week was a great experience. We got to observe, listen to, and speak with policymakers, environmentalists, conservationists, and other groups who directly affect changes to marine and coastal policy. This conference was much different from others that I have attended in the past because it was not strictly a scientific conference. I found the CHOW conference to be valuable because the members of these different stakeholders/interest groups were all together in the same place, discussing the same issues from their own perspectives. When all interested parties have a chance to voice their opinions and concerns on issues meaningful change can be brought about. To me, the common thread throughout the conference was participation of stakeholders as well as cooperation among stakeholders, to set and then meet (marine and coastal) policy goals. I enjoyed the style in which most of the sessions were held; most were a panelist-discussion with a moderator(s). This again, points back to that common theme of stakeholders being involved in the issues and having open dialogue with one another and through that dialogue, progressive policies and practices may emerge. Most of the sessions also had reserved time at the end where the audience was able to ask questions in a no holds barred fashion (again, demonstrating the involvement of *all/most* stakeholders in the shaping of practices and policy). Aside from the sessions, the panelists and speakers were all available for questions and conversation with attendees at any time during the conference.

The sessions I attended were all interesting and engaging. The format encouraged participation and sessions weren't a series of monotonous lectures; there were multiple panelists, each with a career in an industry in/linked to/connected to/or affected by the ocean and marine/coastal policy. The opening day's first session featured panelists: from the series producer of Blue Planet II, a creative conservationist, a cartoonist, and an actor/puppeteer. This was the session I was looking forward to the most and ended up being my favorite session at the conference. Panelists throughout the conference were involved in: media (BBC Blue Planet Documentary director), fishing (commercial fisherman), ocean conservation, education, research, politics (elected official from Maine), technology etc. This is what I enjoyed most, the variety of the groups that were represented at and participated in this conference. The diversity of these groups further demonstrates that ocean practices and policies affect a wide array of people and industries. The takeaways from CHOW are: practices and policies are affected by and shaped by the *participating* stakeholders; for policies to be as progressive and *inclusive* as possible stakeholders need to share information, and perceptions of an issue as well as having dialogue with other stakeholder groups.

**CHOW Experience, NOAA CCME Graduate Scholar Anthony Lima**

I have had nothing but positive experiences throughout my time as a NOAA CCME Scholar. The opportunity to visit D.C. for Capitol Hill Ocean Week (CHOW) was no different. CHOW offered several opportunities to network and explore with marine scientists, environmentalists, policy makers, and activists. The engagement with these sources offered new insight into technical aspects of science, but also brought new perspectives in professional and career options that I was unaware of. The diversity of speakers was incredibly impactful. While I was expecting mostly natural scientists to be present, I was delighted to see a cast that included animators, artists, and even cartoonists. It became apparent quickly that CHOW encompassed critical decision-making with sound science, but also relationships between people and their natural environment.

Navigating CHOW, D.C., and logistical information was very simple, as Dr. Pitter and other CCME leaders communicated excellently through e-mail and teleconference to all participants. Previous CCME functions have allowed for students to network and familiarize ourselves with each other and began to network with their connections as well. This allowed myself and other students to have a productive and efficient first day of CHOW. The first presentation "Igniting Ocean Conservation through Media and Art" brought together all CHOW attendees for a presentation and discussion with artists who use various methods of communication to convey messages about coastal and ocean systems. This presentation dealt with the important role of science communication to a wide range of audiences, and through various styles. Science communication is an issue that we have discussed many times at the University of Texas Rio Grande Valley, but there was a different perspective to see those who focus almost solely on communication and conservation. This presentation also touched upon management in the future, and how children today will be the ones making decisions in the future.

For the second presentation of the first day, participants were able to choose between three different tracks. This allowed CCME scholars the option to explore topics they may not be familiar with or pursue a topic that compliments their research. I chose to review a topic that I am currently working on, adaptive management and fishery governance, but this time focused away from my research in the Gulf of Mexico and toward the northeast fishery. This was an excellent opportunity, especially as my NERTO is in the Northeast Fishery Science Center in Woods Hole, MA. Two different opportunities as a CCME scholar converged (CHOW and NERTO), gave me an incredible chance to gain the perspectives of experts I would not have the ability to meet otherwise. I was able to hear concerns and opinions of scientists and policy makers in the region, as well as pose questions and meet them individually after. Only with the CCME support would I have been able to engage with these experts and seek there scientific and professional advice.

Several fantastic presentations were given the second day as well. I was very pleased to hear discussions aimed at my research topics, especially "Gulf Coast Restoration" and

"Restoring American Fisheries: The Magnuson-Stevens Act." It was also beneficial to interact with individuals who are also connected to NOAA CCME, such as Dr. David Yoskowitz who is Associate Director of the Harte Research Institute, and an advisor to several CCME students at the Texas A&M University Corpus Christi. Many of the presenters are people who have incredible knowledge and experience about the Gulf of Mexico fishery management network that I am studying. Everyone who I approached after their portion of the presentation was also eager to hear from CCME scholars, and to offer opinions and expertise to aid them. I made several professional contacts during CHOW and with the CCME program, and I am extremely thankful for the guidance that they offer.

Due to limited flight options and logistics, I was unable to attend the final day of CHOW, Hill Day. However, I heard from other CCME scholars that the day was unique compared to the first and second. Hill Day was an event that allowed students to analyze some of the environmental and fishery politics and concerns in a new way. The entirety of CHOW was a phenomenal learning and network experience, and I am grateful for the opportunity that NOAA has provided to so many students. I hope to continue my association with NOAA in the future as a PhD student and eventually as an employee with NMFS.

**CHOW Experience, NOAA CCME Graduate Scholar Prian Vidal**

As a NOAA CCME Graduate Scholar, I had the opportunity to visit D.C. and attend Capital Hill Ocean Week (CHOW), 2018. I was able to listen to various individuals, respected in their fields, from academia to industry, and so many others. I was expecting to sit in various panel discussions of environmental scientists, but it was engaging to have a number of speakers outside my familiar sphere of applied science, such as documentary producers and fishery aqua-culturalists. It was engaging to hear various conservationists discuss difficulties in educating the public, natural scientists addressing anthropogenic impacts on the environment, and policy makers highlighting the relationship between the public and our natural resources. To say the least, it was an enlightening experience. Bringing together these individuals from various backgrounds, got the message across just how important our ocean, coastal, and Great Lakes resources are.

"Igniting Ocean Conservation through Media and Art" was a wonderful panel discussion to kick off CHOW 2018. CHOW attendees participated in a panel discussion of how various media platforms and art can be used to stimulate public thinking and cultivate an emotional connection between the public and marine conservation. I found this discussion most intriguing. The speakers were well prepared and delivered thought provoking responses to audience questions. This Fall my colleagues and I plan to volunteer with a local environmental organization in Tallahassee, FL to help educate the public of the impact that single use plastics have on the marine environment. I hope to rely on visual presentations such as animated clips to show students at various academic institutions the cycle of single-use plastics from their soda to the ocean. This panel discussion alone made me realize that the public is made up of individuals and we each learn or impacted differently from one another. It is to my benefit as an environmental student/researcher to learn how to engage my audience through various media platforms to address ocean and coastal issues, such as marine debris.

After this introduction, CHOW attendees could choose from one of three tracks. I chose the track "Working Together for Sustainable Waters." The first panel discussion emphasized how modern tools e.g. artificial intelligence and machine learning can be employed across industry and academia to address ocean and Great Lakes resource conservation and management. This discussion provided insight into tools and aspects I could apply to my own research. I am currently studying nitrogen transformations related to shellfish aquaculture in the Florida Panhandle. Native oyster populations have decreased significantly due to low freshwater inputs in Apalachicola Bay. However, shellfish aquaculture off the coast of Panacea, FL has increased to meet consumer demands. Through my field work and research, I learned the importance of proper management of our coastal and marine ecosystems to provide a sustainable food supply as the U.S. and global population continues to grow.

I enjoyed listening to the next panel "The Rewards and Risks of Ocean Farming." One panelist in particular caught my ear, Omar Alfi, co-CEO of Pacifico Aquaculture. He described many of the challenges that finfish aquaculturalists face, such as day-to-day business operations, technology, and financial investments, as well as risks. However, he also spoke of his accomplishments, alongside his partner, of getting the operation off the ground, providing more than 100 jobs, and the sustainability standards and management practices associated with their business after five years in operation. At a time when the U.S. and the globe are exploring methods to increase food security, finfish as well as shellfish aquaculture have the potential to produce a sustainable food supply, while maintaining eco-friendly conservation practices.

During my first day at CHOW, it was a privilege meeting Dr. Chris Moses of OAR and Dr. Steve Thur of NCCOS/NOS. During lunch they were drilled with questions from my NOAA CCME cohort. They were a reservoir of knowledge and more than willing to impart their information and advice. They provided invaluable insight into a career with NOAA. They mentioned that many individuals start their career with NOAA as contractors.

During day 2 of CHOW, I chose to attend the Gulf Coast Restoration and Restoring American Fisheries presentations. I have an affinity for the Gulf of Mexico, whether recreational fishing, swimming, or sampling that there was no choice, but to attend. The first presentation emphasized the complexity of the Gulf and how our dependence and impact on it as a resource and an ecosystem should continue to push us to further understand our relationship with it and enhance conservation measures. The second presentation had various industry leaders and experts discuss the role of the Magnuson-Stevens Act on fishery restoration and conservation from its passage to today. My flight departed Thursday June 7, 2018, therefore, I was unable to attend Hill Day, but my overall experience at CHOW was unforgettable.

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# VIII. Financial Information

Collaborative Research:

**1. Total leverage funding breakout**

Indicate funding source, type (grant or contract), amount, Center PI, project title; and, how funding contributed to the FY 16 Center award for:

*Postsecondary Student Support:*

a. Dr. Yoskowitz's proposal entitled "Ecological Effects of Sea Level Rise (EESLR) Program", funded in the amount of $120,000, will provide outputs that student Diana Del Angel will use for her dissertation.
b. Richard McLaughlin received a National Academy of Science award in the amount of $164,336 entitled "Gulf of Mexico Student Workshop on International Marine Management". The grant funds U.S./Mexican/Cuban students to study and train together on a coastal resiliency topic in Cuba. CCME student Diana Del Angel will participate in the workshop.
c. Montagna, P., TAMUCC, "Using Comparative Long-term Benthic Data for Adaptive Management of Freshwater Inflow to Three Basins," Texas Water Development Board. $135,000. 2018-2019. *Supports data collection for doctoral student studies, and advances focus on coastal intelligence.
d. Wetz, M.S., TAMUCC**,** "Influence of freshwater inflow gradients on estuarine nutrient-phytoplankton dynamics", *awarded* by Texas Water Development Board. $100,000. 2018-2019. *Supports data collections that will be used by CCME CI student Lily Walker in her dissertation
e. Wetz, M.S., TAMUCC**,** "Baffin Bay water quality study", *awarded* by Celanese Corporation. $150,000. 2018-2021. *Supports data collections that will be used by CCME CI student Lily Walker in her dissertation

**Total leveraged funding for reporting period: $669,336**

*Collaborative Research:*