



# The NOAA LMRSC and its Multifaceted Approaches to Facilitate Student Development and Diversity in the Marine Sciences

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## Abstract

The number of graduate and undergraduate students, particularly underrepresented minority (URM) groups, choosing careers in ocean, earth and atmospheric sciences remains very low compared to the other scientific disciplines. The NOAA Living Marine Resources Cooperative Science Center (LMRSC) recruits, trains, and retains students, particularly those who are underrepresented in marine and fisheries science disciplines, by delivering content, instruction, and experiences that provide students with career-ready skills. Faculty and staff in the LMRSC leverage several approaches and programs to meet these objectives.

## NOAA Living Marine Resources Cooperative Science Center



### Goals of the LMRSC

- Education Goal 1:** Prepare the **future workforce** for marine and fisheries sciences
- Education Goal 2:** Strengthen collaborations across universities to **enhance academic programs** in marine and fisheries sciences
- Research Goal 3:** Develop an exemplary capacity for **scientific collaborations** among partner institutions in the fields of marine and fisheries sciences
- Administration Goal 4:** Organizational excellence for effective and efficient **management** of the programs and activities of the Center
- Administration Goal 5:** Effectively **communicate** the activities and accomplishments of the Center
- Administration Goal 6:** **Assess and evaluate** the Center's goals and objectives

## LMRSC Cohort Experience for Graduate Students



NOAA LMRSC Cohort Experience for Graduate Students, 2018. photo credit: M. Sexton



- ### Structure
- 5-day workshop focused on four core competencies in NOAA Fisheries Science
  - Students engaged in ½ day and full day immersion experiences led by faculty and NOAA scientists
  - Professional development workshops are given through the cohort experience

### Evaluation of the Workshop

- 19 graduate students from 7 partner institutions (March 2018 workshop)
- 15 students completed a survey at the end of the workshop
- Students represented 6 of the 7 institutional partners
- 6 students are pursuing MS degrees, and 9 are PhD students

Two clusters of workshop modules emerged as statistically significant value points for student participants (based on Chi-square extractions at a  $p \leq .05$  level).

Developing relationships between and among other students, faculty, and NOAA scientists was a significant experience in student scoring.

Obtaining career pathway information, interviewing skills, and enhanced knowledge of career opportunities was a significant experience in student scoring.

## Summer Research Experiences for Undergraduates

	Hosted By
NSF Research Experience for Undergraduates (REU)	<ul style="list-style-type: none"> <li>University of Maryland Eastern Shore</li> <li>Oregon State University</li> <li>Savannah State University</li> </ul>
Summer Undergraduate Program	<ul style="list-style-type: none"> <li>University of Maryland Center for Environmental Science Institute of Marine and Environmental Technology</li> </ul>
LMRSC Rising Sophomore Experiential Training Program (RSETP)	<ul style="list-style-type: none"> <li>University of Maryland Eastern Shore</li> </ul>
Key Features	
<ul style="list-style-type: none"> <li>Individual Research Projects</li> <li>Geared toward rising sophomores</li> <li>Participants develop Presentation skills</li> </ul>	<ul style="list-style-type: none"> <li>Receive Mentorship</li> <li>Stipend program</li> <li>College credit (program dependent)</li> </ul>
	<ul style="list-style-type: none"> <li>Hands on experience</li> <li>Technical writing skills</li> </ul>



Above: 2018 SSU REU Cohort with Dr. Christ Hintz at Tybee Island, GA photo credit: T. Cox  
Below: 2018 IMET summer interns with Dr. Rosemary Jagus photo credit: R. Jagus



### Professional Development

REU in Marine Estuarine Sciences Program and interns in the RSETP at UMES participate in a joint program that includes individual research projects. The program employs a peer-led writing workshop that utilizes best practices for peer review and prepares students for professional writing.

The IMET Summer Internship Program provides students with individual research projects, training in science communication/visualization and exposure to pitching ideas for start-up environmental companies. Students are eligible to receive 3 credits at their home institution.

### Geosciences Bridge Program

- 6 week experiential experience
- Paid internship
- Rising Freshman
- Content focus geoscience and math

### Coast Camp Program

- 4 week, half day program
- Experiential program
- Ages 7-18yrs
- Content focus on marine sciences and local resources and community



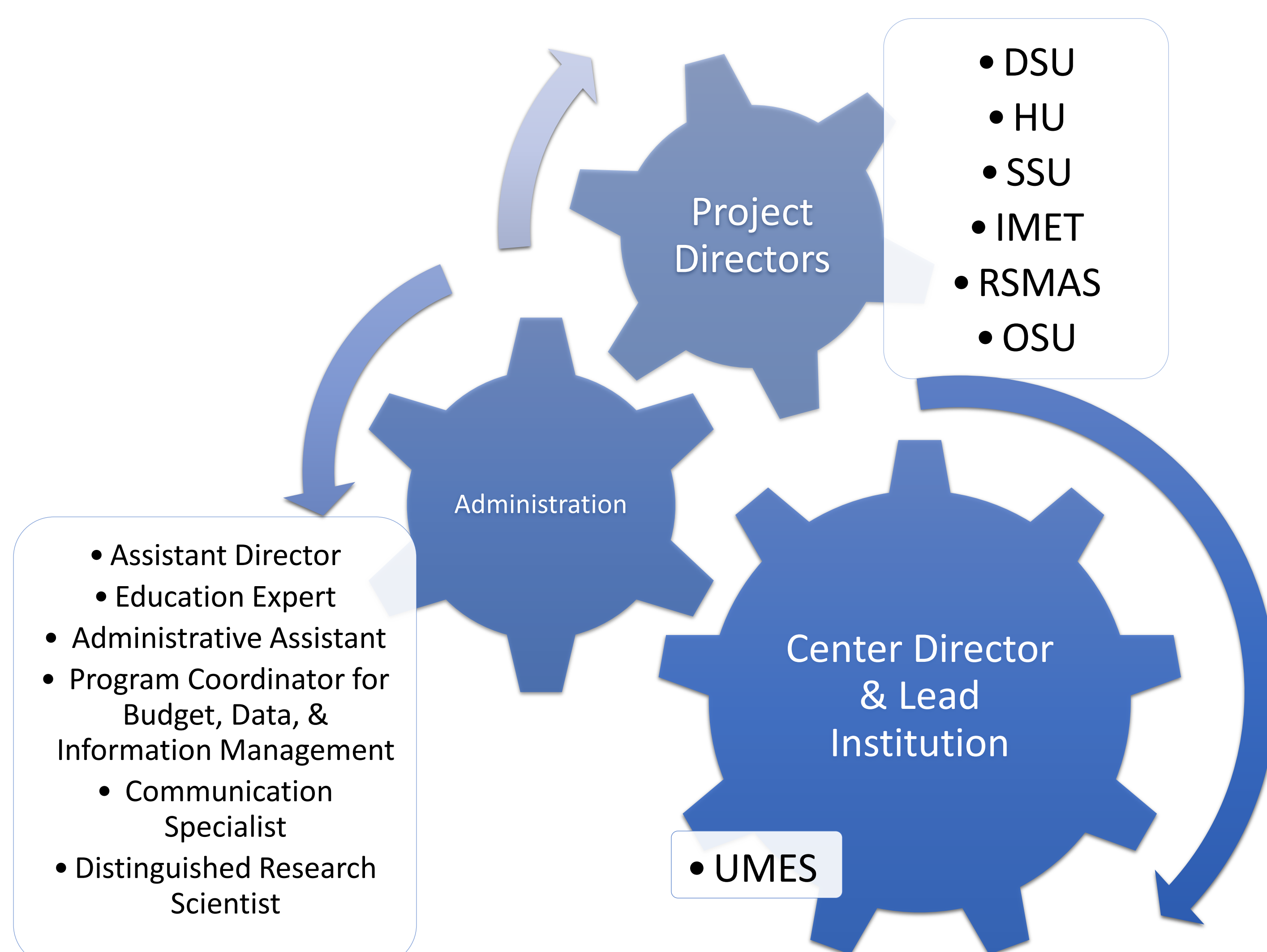
Above: 2018 SSU Coast Camp collecting marsh data Savannah, GA photo credit: E. Weigel  
Below: 2018 Geosciences Bridge Program participants participate in a canoe trip on Pocumoke River.



### K-12 programs

The Coast Camp program takes place on a college campus with a marine science program. This instructional design is to introduce students to collegiate practice as well as recruit them to Bachelor of Science programs in marine science.

The Geosciences Bridge program at UMES. These seniors earn two college credits towards a bachelor's degree in a geoscience discipline. The program acts as a pipeline for students who are seeking STEM education and careers



### Proposal Writing

- Small group
- Utilized RFP for basis
- Student groups assigned roles to write grant
- Presented proposal to a voting committee
- Comments were provided to students

### Stress and Conflict Management Seminar

- Realistic scenarios were presented
- Students engaged in debate
- Recommended resolutions were shared

### Career Opportunities in Marine and Fisheries Science

- Pathways Program
- Resume workshop
- Application webinar

### Seminar Series

- Student led seminar series
- Conducted online and is about 45 min
- Present current research
- Opportunity to share research with peers and receive feedback.

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