UMCES: NOAA-EPP Funded Living Marine Resources Cooperative Science Center Activities

RAS-N Workshop, December 2019

Rosemary Jagus, Project Director, UMCES-IMET

IMET

University of Maryland
CENTER FOR ENVIRONMENTAL SCIENCE

NOAA LMRCSC Living Marine Resources Cooperative Science Center

https://www.umces.edu/lmrcsc

NOAA-EPP funded Living Marine Resources Cooperative Science Center 2001-present

- The mission of the LMRCSC is to prepare a diverse student body for careers in science, management and public policy through research that supports the sustainable harvest of our nation's living marine resources
- Partnership with UMES (lead), Delaware State University, Hampton University, Oregon State University, Savannah State University, University of Miami, Rosenstiel School for Marine & Atmospheric Sciences (RSMAS)
- Rose Jagus serves as LMRCSC co-PI and UMCES-IMET Project Director

The NOAA-EPP-funded Cooperative Science Centers are Federal STEM education and future workforce programs for NOAA and NOAA mission-related enterprises

- The LMRCSC is aligned with NMFS
- In the last eighteen years, the IMET-LMRCSC has supported >200 minority undergraduate internships at IMET, has graduated 3 minority master's students, 6 minority Ph.D. students and currently supports 4 minority Ph.D. students and 2 minority MS students, as well as co-mentoring students from partner institutions
- The LMRCSC has been funded competitively for four funding cycles including 2016-2021

As an LMRCSC partner, UMCES-IMET provides:

- Training for M.S. and Ph.D. students
- Capacity building in molecular biotechnology approaches for our LMRCSC partner institutions through research collaborations
- Graduate level classes via IVN in molecular/cell biology, bioinformatics, marine molecular microbial ecology, molecular immunology, comparative molecular endocrinology, diseases of the Chesapeake Bay, responsible conduct of research

LMRCSC Program for Graduate Students

In addition to mentor-directed research project, students:

- Take 12-week research project at NOAA (NERTO)
- Take intensive workshop in Year 1 in NOAA-NMFS areas and Cohort building activities
- Attend LMRCSC annual science meeting with LMRCSC mentors and NOAA-NMFS scientists
- Attend NOAA-EPP Forum every 2 years
- Participate in NOAA-EPP courses & seminars

NOAA's Experiential Research Training Opportunities (NERTOs)

- For MS and Ph.D. students: 12 consecutive weeks in NOAA lab
- Travel/lodging & contracted costs supported by LMRCSC
- NERTO projects developed by student, LMRCSC mentor, NOAA mentor; approved by LMRCSC Director

IMET LMRCSC Cohort 1-4 Graduate Students

L to R: Amanda Lawrence, Shadaesha Green, Rose Jagus, Ammar Hanif, Benjamin Frey, Kia Ramarui, Anya Byrd

Ammar Hanif
Cohort 1

- FIRST recruited as IMET summer intern from Morgan State University
- **Successfully defended Ph.D. Oct 24, 2019.** Diet and microbiota of Gulf menhaden using DNA metabarcoding (Jagus/Place labs). Research project arose from CSC Forage Fish Project. Has generated three first author manuscripts
- Initial 2-year MD-SeaGrant fellowship
- Awarded TAB funding for 2014/15, 2015/16, 2016/17
- Awarded Knauss Marine Policy Fellowship for 2018. Placed with Dr. Ed Johnson, Monitoring & Assessment Branch, NCCOS
- NERTO with NOAA's Mussel Watch Program looking at gill microbiota and diet of *Dreissenid* mussels in Great Lakes us DNA metabarcoding, NCCOS

Shadaesha Green
Cohort 1

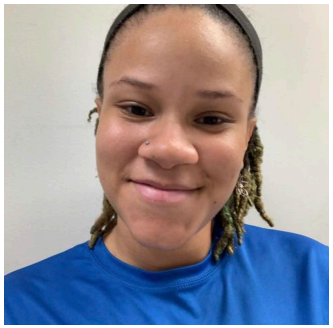
- FIRST recruited as IMET summer intern from Hampton University
- Initial 2-year Louis Stokes Alliances for Minority Participation Fellowship (LSAMP)
- 2018 recipient of Scott Gudes Fellowship
- PhD thesis project on reproductive physiology and endocrinology of the red deep sea crab, *Chaceon quinquedens*, mentor Dr. Sook Chung
- NERTO at NOAA Chesapeake Bay Office with Dr. Bruce Vogt, compiling fish survey and habitat data to quantify and map striped bass spawning and nursery areas in the Chesapeake Bay
- Defends Fall 2020

Amanda Lawrence
Cohort 2

- FIRST recruited as IMET summer intern from Salisbury State University
- Initial 1-year National Institute of Standards and Technology (NIST) Fellow
- MS project on insulin-like androgenic gland hormone of the red deep-sea male crab, *Chaceon quinquedens*
- NERTO at NOAA NWFSC, Mukilteo, WA, with Dr. Paul McElhany, looking at effects of ocean acidification on Dungeness crab development
- Awarded 2020 Knauss Marine Policy Fellowship
- Defends Jan 2020

Benjamin Frey
Cohort 3

- FIRST recruited as IMET summer intern from Morgan State University
- MS project on validation of monkfish age and growth using microconstituent analysis of hardparts, mentor Dr. Dave Secor, UMCES-CBL, co-mentor Dr. Rose Jagus, UMCES-IMET
- Participated in Leg 3 of NOAA Fall 2019 Bottom Trawl
- Recently completed NERTO at NEFSC, Woodshole with collaborator Dr. Anne Richards



Anya Byrd
Cohort 3

- Former UMBC Meyerhoff scholar
- Initial 3-y funding through NSF graduate fellowship
- Awarded 2-y UMCES Presidential Fellowship
- Ph.D. project on role of mTOR (mechanistic target of rapamycin) in molting of the blue crab, *Callinectes sapidus* with Dr. J. Sook Chung
- NERTO: TBD

Kiarii Ramarui
Cohort 4

- MS from UMBC
- PhD project on enhancing the heterotrophic growth of the green microalga *Haematococcus pluvialis* for use in aquaculture feed with Dr. Yantao Li, UMCES-IMET
- NERTO: TBD; looking for a NOAA collaborator with interests in sustainable, high density production of *H. pluvialis* for astaxanthin production

LMRCSC-IMET graduate recruitment plan

- Attract students through LMRCSC-IMET summer undergraduate internship program (likely candidates are hotly pursued)
- Booth materials for relevant venues: scientific meetings, local college fairs
- Visits to partners
- Attract students through semester research mentorships provided for credit for under-represented undergraduates from UMBC, Morgan State University, Coppin State University

IMET summer undergraduate program is our most important recruitment tool

Summer interns 2019

BUNTING FAMILY FOUNDATION

Support Diversity in Science: Give the gift of education!

- NOAA-EPP does not support our Summer Internship Program
- We are currently supported by funds from private foundations
- Become a part of this program that inspires young generations to discover the possibilities of science. Your donations will help ensure that our efforts to achieve a diverse science community continue for the years to come
- https://www.givecampus.com/campaigns/2972/donations/new

BUNTING FAMILY FOUNDATION