FALL 2020

THE LIVING SEA

The e-newsletter of the LMRCSC

UNIVERSITY of MARYLAND EASTERN SHORE

NOAA LMRCSC Living Marine Resources Cooperative Science Center

NEWS & FEATURES

TO THE LMRCSC COMMUNITY

Dr. Paulinus Chigbu
LMRCSC Director

To say that 2020 has been eventful would be an understatement. Many of the LMRCSC campuses have adjusted their learning patterns to accommodate these unprecedented times; however, through it all, the Center continues to not only persevere, but excel.

In this edition of *The Living Sea,* we are highlighting the endeavors of our LMRCSC students as well as faculty. You will find that our distinguished researchers are doing great things, such as winning awards for their excellent work with students, earning federal opportunities through scholarships and receiving grant funding towards research and lab work. Our accomplished professors and cohorts continue to adapt to the times at hand and press forward, reaching new accomplishments!

With the current state of our nation, many are left in a state of concern and uncertainty; however, one thing that is for sure is the LMRCSC will continue to adjust, adapt and excel while conducting great science! As always, thank you for your support.

Sincerely,

Paulinus Chigbu, Ph.D

GEOSCIENCE PROGRAM

This year, the LMRCSC held its annual Geoscience Program. However, due to social distancing guidelines, the summer learning experience was held virtually. Read what happened through the words of UMES Agricultural Communications and Media Associate, Gail Stephens.

Summer Geosciences Bridge Program prepares students for college life

By Gail Stephens, UMES

Top Row (left to right) Destiny Coleman, Glen Collins Jr., Jayne Colbert & Reem Dafalla
Bottom Row (left to right) Joel Williams, Miya Felder & Nyla Jeanpierre

This year, seven incoming freshmen participated in UMES' Summer Geosciences Bridge Program, organized virtually for the first time in seven years because of the COVID-19 pandemic.

Students attended online lectures in various areas of geoscience, including marine science, atmospheric science and remote sensing/GIS, said Dr. Paulinus Chigbu, the University System of Maryland Wilson H. Elkins Professor of Marine Science at UMES and director of the summer program.

Participants, he said, also engaged in chemistry lectures, interactive labs like "Fish Banks," which focused on scientific policy, and a downsized version of the annual "Coastal Clean-Up" called, "Do YOUR part Clean-Up," where the student interns went to a local park or beach on their own to collect trash.

Professional development webinars such as "Tools for Success," "Study Habits, Note-taking and Time Management," "Resume and Professional Writing" and "Scientific Communication" all set the foundation for student success along with information on how to do an "Elevator Pitch" and scholarship and internship internet searches.

Opportunities existed for the future undergraduates to network virtually with two UMES graduate students, Kayle Krieg and Kasondra Rubalcava, who shared their academic experiences at UMES and their research projects.

The interns worked on mini-projects over the course of the six-week program and presented their research results at a virtual mini-symposium on August 7. Topics ranged from "Physical and Chemical Characteristics of the Maryland Coastal Bays" to "Distribution of Mud Crab (*Dyspanopeus sayi*), Lady Crab (*Ovalipes ocellatus*) and Horseshore Crab (*Limulus Polyphemus*) in the Coastal Bays of Maryland."

They were able to enroll in and get credit for successful completion of a college level math course to put on their transcripts.

"Faculty, staff and parents were pleased with the quality of presentations given by the students," Chigbu said. "The students stated enthusiastically that the program has placed them a step ahead of other incoming freshmen by preparing them for college life."
Dr. Ali Ishaque, a professor in the Department of Natural Sciences, was the co-director of the program and Cy'Anna Scott, the coordinator.

Gail Stephens, agricultural communications and media associate, School of Agricultural & Natural Sciences, University of Maryland Eastern Shore, 410-621-3850, gcstephens@umes.edu.

FACULTY SPOTLIGHT

Our faculty is always working hard to ensure that our students are receiving the best education. Look below and see what wonderful things our researchers have been up to.

NOAA LMRCSC professor awarded national research grant

When it comes to understanding marine life and the characteristics of dolphins, Carolina Bonin Lewallen, Ph.D., an Assistant Professor of Marine and Environmental Science at Hampton University, is the go to expert on the topic. The NOAA LMRCSC faculty member recently won a research grant totaling $300,000. The newly awarded funding provided by The National Science Foundation will be used to conduct research on dolphin skin molecular markers, which are studied to help reveal the adaptions of dolphins' lives at sea.

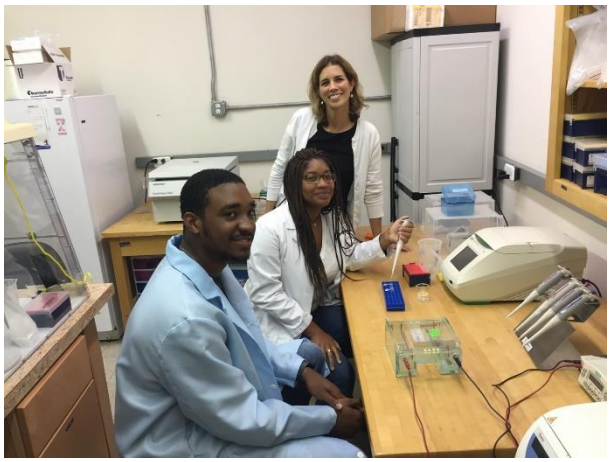
As a means to further understand the molecular markers that are in dolphin skin, one must study the epigenetics of the species. According to the National Human Genome Research Institute, epigenetics is described as the study of the heritable or phenotypical changes caused by the activation and deactivation of genes without any change to the underlying DNA sequence of the organism. More specifically, Dr. Lewallen will focus on MicroRNAs which are a type of epigenome. MicroRNA research is a trailblazer in the field of molecular biology and it applies to both the natural and biomedical fields. With this research grant, Dr. Lewallen hopes to expose Hampton University and LMRCSC students to this revolutionary area of knowledge.

"My research focuses on the dolphin's epigenome," stated Dr. Lewallen. The epigenome consists of molecules that can turn genes "on and off" and control the production of protein levels in cells. It is because of these characteristics that they are considered the "orchestrators" of the genome."

Due to living in an aquatic environment, one may forget that dolphins are mammals. And like all mammals, dolphins have very fine hair, or "whiskers" when they are in utero; however, once a dolphin is born, they lose the hair as a form of adaptation to living in the water.

In addition, scientists have also discovered that dolphins “slough,” or renew their skin at a very high rate, resulting in a very smooth skin texture, which is ideal for their aquatic living environment. Dr. Lewallen’s research will look closely at these characteristics and their underlying molecular mechanisms.

“Skin is often a good indicator of the marine mammal’s health, stated Dr. Lewallen. “In addition, having an in-depth knowledge of their skin allows for us to have a better understanding of human skin. The more we know about dolphins, the better equipped we will be in understanding human skin and its diseases.”



Although not a novice to marine science, Dr. Lewallen is in the early stages of her academic career, which was one of the factors in her earning the science foundation’s grant. The funding award was provided by The National Science Foundation’s HBCU-UP program. The HBCU-UP program provides funding to early career professors who want to establish their research labs at HBCUs. The initiative was created to fortify STEM education at historically black colleges and universities and provide opportunities to underserved students. The research funded by this award will not just provide opportunities to students, but it will be used to contribute to Hampton University’s mission of excellence in teaching and cutting edge science.

Professor wins 2020 faculty excellence award

With nearly 20 years of experience at her home institution, Dr. Gulnihal Ozbay is adamant that her career is not just about teaching but it is also about guiding and preparing her students to excel in their career fields. It is because of such passion and zeal for young minds that the professor earned one of Delaware State University's 2020 Faculty Excellence Awards.

As a NOAA Living Marine Resources Cooperative Science Center and Delaware State University faculty member, Dr. Ozbay may carry a full load but she seems to effortlessly manage it all. Presently she teaches three courses, including environmental toxicology, climatology and introduction to environmental science, in addition to serving as chair of her university's Honors Council. Although Dr. Ozbay's teaching and lecturing is impactful and commendable, it is the distinguished professor's commitments outside of the classroom that have caused her to gain recognition from her university. Since 2012, Dr. Ozbay has advised and mentored nearly 400 students and put them on track for collegiate and career success.

"I have enjoyed spending time guiding and advising both undergraduate and graduate students," stated Dr. Ozbay. "The workshops and conference meetings that I have facilitated and the courses that I have developed are primarily a means to better prepare students for their careers."

The Delaware State University Faculty Excellence Awards is an annual honor that is announced during the spring semester. Every year, faculty members are nominated by their colleagues to receive an award in the categories of teaching, research/creative activity, University/community service and advising. Upon receiving the nominations, a designated committee then reviews the nominees and selects the recipients to receive the awards. This year, Dr. Ozbay was recognized for Excellence in Advising; however, this isn't her first time being recognized for her stellar performance. In 2018, the natural resources professor earned the school's Excellence in University/Community Service award.

When asked what she considers the most rewarding part of her job, Dr. Ozbay, is quick to reply with two simple words –"the students."

"When my students first start their collegiate career, they are only half full," noted the senior STEM professor. "In the beginning they are unsure and a bit nervous about their futures; however, upon graduation, you can see how they've grown and are full of self-confidence and assurance. The greatest moment, for me, is when they go from being my students to becoming my respected colleagues. It is then when I get my greatest reward."

STUDENT SPOTLIGHT

**LMRCSC faculty aren't the only ones earning great rewards.
Ph.D. fellow, Shadaesha Green is blazing a trail at the intersections of marine science, government and public policy.**

NOAA LMRCSC Scholar Becomes 2021 John A. Knauss Marine Policy Fellowship Finalist

When one thinks of marine science, they often do not associate it with government and public policy; however, for Living Marine Resources Cooperative Science Center student, Shadaesha Green, those two categories will soon be her primary focus. Last month, Mrs. Green was selected as one of 74 finalists for the John A. Knauss Marine Policy Fellowship. The program, which is collaboratively supported by the Sea Grant network and NOAA, provides educational and professional opportunities in policy to graduate students who desire a career in public policy surrounding the areas of coastal, ocean and the Great Lakes.

Shadaesha is a fifth year Ph.D. student studying environmental science with a focus on the red deep sea crab species at the University of Maryland Center for Environmental Science Institute of Marine and Environmental Technology. Having a great interest in science communication, Mrs. Green was elated when she learned of her new fellowship opportunity.

"After graduate school, I want to work at the intersection of science and policy," stated Green. "So when I found out that I would be awarded the Knauss fellowship, I was very excited and really relieved. I enjoy the communication aspect of science and this fellowship will help me better prepare for a career in that field, in addition to allowing me to grow and expand my network."

Established by the United States Congress in 1966, the National Sea Grant College program, which supports the John A. Knauss Marine Policy Fellowship, is on a mission to build and sustain a healthy coastal environment. The Sea Grant network is a culmination of partnerships with NOAA, federal organizations and various universities who all work in tandem to aid in educating the public on the conservation of the nation's coastlines and marine resources.

The Knauss Fellowship provides finalists a one year fellowship at a federal agency where recipients have the opportunity to work in science policy and gain experience in implementing legislation to preserve the nation's coastline.

Through her hard work and own merit, Shadaesha earned her finalist opportunity; however, she does acknowledge that she had the help of her mentor, Dr. J. Sook Chung, to guide her through the application process. Applying for the fellowship was somewhat intimidating, but Dr. Chung aided Shadaesha in focusing on her career goals and creating a timeline to ensure she met the application deadline.

"The process was a bit daunting, but Dr. Chung truly provided the support that I needed in order for me to successfully gain the fellowship," stated Green. "With her help, I was able to complete every necessary step and fortunately, it all paid off."

Beginning February 2021, Shadaesha will descend upon Washington, D.C. to start her one year fellowship at a federal agency, or possibly even work on Capitol Hill. There she will assist in creating policies and hopes to be placed in a position that aids in the preservation of marine life and work to protect species that are on the brink of extinction. With the upcoming work assignment, the doctoral student is anxious to begin the new opportunity and start building her STEM career.

"I'm excited to be able to gain hands-on experience in the field," exclaimed Green. "Being in the nation's capital will give me direct access to the legislative process. With this opportunity, I look forward to utilizing my education and skills so that I can positively impact marine life and our environment overall."

**Shadaesha is one of four NOAA LMRCSC EPP fellows who have received Knauss Fellowship in the past two years.*

TAB PROJECTS

Below are a list of the LMRCSC's student research projects for FY2020

Project title: An analysis of distribution and abundance of microplastics in selected commercially important species in Northern Georgia coastal waters
Name of Applicant: Savannah M. Geiger (M.S. student, Savannah State University)
Co-PI: Sue C. Ebanks (SSU)
NOAA Collaborator: Ashok Deshpande, NOAA-NMFS J.J. Howard Sandy Hook Lab, NJ; and Kimberly Roberson, NOAA-NOS Gray's Reef National Marine Sanctuary, GA
LMRCSC Collaborator: Ali Ishaque, UMES; Margaret Sexton, LMRCSC Assistant Director, SSU undergraduate interns (e.g. Joe Day, Breanna Roland, and Brittany Thomas)

Project title: Investigating the impacts of adult oyster conditioned water on Crassostrea virginica larvae utilizing direct setting techniques in the Hampton River, VA
Name of Applicant: Sierra Hildebrandt (M.S. student, Hampton University)
Co-PI: Deidre Gibson (Hampton University)
NOAA Collaborator 1: Stephanie Westby, NOAA NCCOS
NOAA Collaborator 2: Jason Spires, NOAA NCCOS COL

Project title: Proteomic analysis of two Haematococcus pluvialis mutant strains as aquaculture feedstock
Name of Applicant: Kyarii Ramarui (Ph.D. student, Univ. of Md Center for Env. Science, IMET)
Co-PIs: Yantao Li (UMCES), Allen Place (UMCES), Joseph Pitula (UMES)
NOAA Collaborator: Gary Wikfors (NOAA Milford Lab, CT)

Project title: Life history and disease ecology of the blue crab, a key benthic-pelagic link in tropical and temperate American estuaries
Name of Applicant: Eric Schott (Faculty, UMCES-IMET)
Co-PI: Bradley Stevens, UMES NOAA
Collaborator: Bruce Vogt, NOAA Chesapeake Bay Office Research
Student: Olivia Pares (Ph.D. student, IMET-UMCES)
Collaborators: Harold Manrique Hernández, San Juan Bay Estuary Program; Steve Doctor, Maryland DNR

Project title: Evaluating the effects of landscape scale habitat variability on white shrimp (Litopenaeus setiferus) population dynamics in Georgia estuaries.
Name of Applicant: Matthew Kenworthy (Post-doctoral Research Associate, SSU)
Co-PI: Dionne Hoskins-Brown
Collaborators: Jennifer Doerr (NOAA); Dr. Maurice Crawford (LMRCSC UMES)

Project title: Investigating the effects of climate change on heat shock proteins and development in the early life history stages of Nassau grouper
Name of Applicant: Janelle Layton (M.S. student, Oregon State University)
Co-PIs: Scott Heppell, Oregon State University and Carolina Bonin, Hampton University
NOAA Collaborator: Steve Gittings, Chief Scientist, NOAA Office of National Marine Sanctuaries

Project title: Assessment of new technologies for post-harvest oyster purification
Name of Applicant: Dennis McIntosh (Faculty, Delaware State University)
Co-PIs: Daniel Grosse, Dorothy Leonard, Salina Parveen (UMES)
NOAA Collaborator: John Jacobs (NOAA Cooperative Oxford Lab, MD)
Research Student: Caitlyn Czajkowski (M.S. student, DSU)

Project Title: Evaluating physiological and immune responses of snow crabs (*Chionoecetes* sp.) to *Hematodinium* infection.
Name of Applicant: Shanelle Haughton (Ph.D. student, UMES)
Co-PI: Joseph Pitula (Faculty, UMES)
NOAA Collaborator: Pamela Jensen (Western Regional Center, Seattle, WA)

Project title: Understanding adaptive capacity: An analysis of community perceptions and policy responses to ocean acidification and other marine stressors on the West Coast
Name of Applicant: Victoria Williams (M.S. student, OSU)
Co-PI: Ana Spalding (Faculty, OSU)
NOAA Collaborator: Shallin Busch (NWFSC, Seattle, WA)

Project title: The occurrence of microplastics in Maryland Coastal Bay fishes
Name of Applicant: Imani Wilburn (M.S. student, UMES)
Co-PI: Maurice Crawford (UMES) and Kausik Das (UMES)
NOAA Collaborator: Ashok Deshpande, NEFSC, J.J. Howard Lab, Sandy Hook

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