

THE LIVING SEA

The e-newsletter of the LMRCSC



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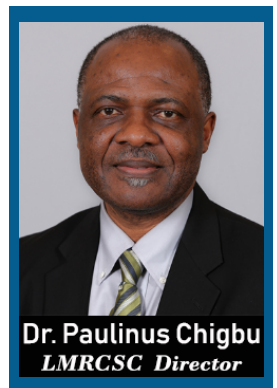
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TO THE LMRCSC COMMUNITY

I am pleased to present you with the Spring 2020 edition of the Living Marine Resources Cooperative Science Center's (LMRCSC's) newsletter, *The Living Sea*. In this edition we provide highlights of LMRCSC students who took part in the NOAA Experiential Research and Training Opportunity (NERTO) internship, their NOAA mentors, and facilities in which they interned.



Through successful collaborations with NOAA, the LMRCSC has provided our graduate students with career enhancing internships, in addition to supporting our undergraduates as they build leadership skills through the implementation of public service projects.

The LMRCSC will continue to meet the goal of preparing the future workforce in marine and fisheries science by providing an excellent education, and creating an environment for students to excel.

Paulinus Chigbu
Paulinus Chigbu, Ph.D.

NERTO INTERNSHIPS

All LMRCSC graduate students participate in the NOAA Educational Partnership Program's (EPP) Experiential Research and Training Opportunity (NERTO) program. The 12 week internship takes place at a NOAA lab/facility where students, under the supervision of a NOAA mentor scientist, conduct research, acquire new knowledge and skills, and are introduced to the structure and function of NOAA operations.

From 2016-2019, 26 LMRCSC graduate students interned at 15 NOAA facilities as part of the NERTO program. Below, you will find the institutional affiliations, lab locations, and internship titles of our current students and recent graduate's NERTO internships.



Adrienne Wilson, NOAA EPP LMRCSC Graduate Fellow

Home Institution: University of Miami-RSMAS

Major: Marine Biology and Ecology

NOAA Internship Mentor: Dr. Robert Allman, National Marine Fisheries Service, SEFSC, Panama City, FL

NERTO Project Title: Age and Growth of Lane Snapper in the Gulf of Mexico



Amanda Lawrence, NOAA EPP LMRCSC Graduate Fellow

Home Institution: IMET - UMCES

Major: Marine, Estuarine and Environmental Science

NOAA Internship Mentor: Dr. Paul McElhany, NWFS, Mukilteo Field Station, WA

NERTO Project Title: Developing methods to detect the effect of CO₂ on the physiology of Dungeness crab



Amanda Pappas, NOAA EPP LMRCSC Graduate Fellow

Home Institution: Delaware State University :

Major: Natural Resources

NOAA Internship Mentor: Dr. Gary Wikfors, NEFSC, Milford, CT

NERTO Project Title: Change in Photosynthetic Efficiency and Chlorophyll Fluorescence over Time in Prey Starved *Dinophysis acuminata*



Ammar Hanif, NOAA EPP LMRCSC Graduate Fellow

Home Institution: IMET- UMCES

Major: Marine, Estuarine and Environmental Science

NOAA Internship Mentor: Dr. Ed Johnson, NOAA Headquarters, Silver Spring, MD

NERTO Project Title: Temporal Study of Diet and Microbiome of Mussels Collected from Lake Michigan



Andre Price, NOAA EPP LMRCSC Graduate Fellow

Home Institution: University of Maryland Eastern Shore

Major: Marine, Estuarine and Environmental Science

NOAA Internship Mentor: Dr. Richard McBride, NOAA NEFSC, Woods Hole, MA

NERTO Project Title: Prey Identification and Quantification of Black Sea Bass (*Centropristis striata*) Stomachs



Angie Munguia, NOAA EPP LMRCSC Graduate Fellow

Home Institution: Oregon State University

Major: Fisheries & Wildlife – Fisheries Science

NOAA Internship Mentor: Dr. Laurie Weitkamp, NOAA –NWFSC, Point Adams Research Station, Hammond, OR

NERTO Project Title: Juvenile salmon long term-habitat monitoring and field collections for action effective monitoring research (AEMR) in the Lower Columbia River and Estuary



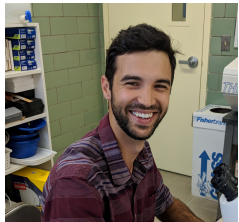
Benjamin Alexander Frey, NOAA EPP LMRCSC Graduate Fellow

Home Institution: CBL – IMET

Major: Marine, Estuarine and Environmental Science

NOAA Internship Mentor: Dr. Anne Richards, NOAA Northeast Fisheries Science Center (NEFSC), Woods Hole, MA

NERTO Project Title: Validation of age and growth estimates of New England and Mid-Atlantic demersal fishes using microstructural analysis of hardparts



Brian Galvez, NOAA EPP LMRCSC Graduate Fellow

Home Institution: Delaware State University:

Major: Natural Resources

NOAA Internship Mentor: Dr. Howard Townsend, NOAA Chesapeake Bay Office, COL, Oxford, MD.

NERTO Project Title: Determining diet of Delaware Bay weakfish using stomach content and stable isotope analysis



Cara Schweitzer, NOAA EPP LMRCSC Graduate Fellow

Home Institution: University of Maryland Eastern Shore

Major: Marine, Estuarine and Environmental Science

NOAA Internship Mentor: Dr. Michael L. Burton, NOAA- SEFSC, Beaufort Lab, NC

NERTO Project Title: Evaluation of Southeast Reef Fish Survey (SERFS) videos for Atlantic Sharks



Cristin Mayes, NOAA EPP LMRCSC Graduate Fellow

Home Institution: Hampton University:

Major: Applied Mathematics

NOAA Internship Mentor: Dr. Michael Fogarty, NOAA – NEFS), Woods Hole, MA

NERTO Project Title: Ecosystem Based Approaches to Modeling Fish Species Distributions in the Chesapeake Bay



Detbra Rosales, NOAA EPP LMRCSC Graduate Fellow

Home Institution: University of Maryland Eastern Shore

Major: Marine, Estuarine and Environmental Science

NOAA Internship Mentor: Dr. John Jacobs, NOAA/NCCOS/Oxford Lab.

NERTO Project Title: The influence of okadaic acid on gene expression and bacterial susceptibility



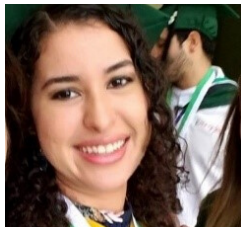
Emily Griffin, NOAA EPP LMRCSC Graduate Fellow

Home Institution: Savannah State University:

Major: Marine Science

NOAA Internship Mentor: Dr. Patricia Rosel, NOAA-SEFSC, Lafayette, LA

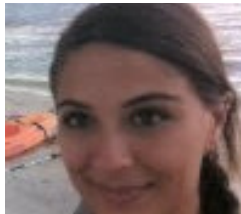
NERTO Project Title: Evaluation of the Southern Border of the Northern Georgia/Southern South Carolina Estuarine System stock of Common Bottlenose Dolphins (*Tursiops truncatus*) through Genetic Analyses



Enid C. Muñoz Ruiz, NOAA EPP LMRCSC Graduate Fellow

Home Institution: University of Maryland Eastern Shore: **Major:** Aquatic Toxicology
NOAA Internship Mentor: Dr. Ashok Deshpande, NOAA-NEFSC, J.J. Howard Lab, Sandy Hook, NJ

NERTO Project Title: Method development of Polybrominated Diphenyl Ethers (PBDEs) QUECHERS extraction in Scallops



Halle O'Farrell, NOAA EPP LMRCSC Graduate Fellow

Home Institution: University of Miami - RSMAS

Major: Marine Biology and Fisheries

NOAA Internship Mentor: Dr. Enric Cortes, NOAA-SEFSC, Panama City Field Lab, Panama City, FL

NERTO Project Title: Comparing shark harvest control rules to potential biological removals when determining total allowable catches



Jorge J. Rodriguez, NOAA EPP LMRCSC Graduate Fellow

Home Institution: University of Maryland Eastern Shore

Major: Marine, Estuarine and Environmental Sciences

NOAA Internship Mentor: Dr. Gary Wikfors and Dr. April Croxton; NOAA-NEFSC, Milford, CT

NERTO Project Title: Use of density step gradient centrifugation and differential lectin binding to characterize *Mytilus edulis* hemocyte subpopulations by flow cytometry



Kasondra Rubalcava, NOAA EPP LMRCSC Graduate Fellow

Home Institution: University of Maryland Eastern Shore

Major: Marine, Estuarine and Environmental Science

NOAA Internship Mentor: Dr. Howard Townsend, NOAA/NMFS/ST/Ecosystems, COL, Oxford, MD

NERTO Project Title: Development of a Maryland Coastal Bays Ecosystem Model to Assess the Influence of Climatic Factors on Biomass Distributions of Fish and Macroinvertebrates, Food Web Linkages and Community Structure



LaTreese S. Denson, NOAA EPP LMRCSC Graduate Fellow

Home Institution: University of Miami, RSMAS

Major: Marine Biology and Ecology

NOAA Internship Mentor: Dr. James Thorson, NOAA, -AFSC, HEPR, Seattle, WA

NERTO Project Title: Environmental influences on indices of abundance for King Mackerel in the Gulf of Mexico examined through spatiotemporal geostatistical models



Laura Almodóvar-Acevedo, NOAA EPP LMRCSC Graduate Fellow

Home Institution: University of Maryland Eastern Shore

Major: Marine-Estuarine-Environmental Science

NOAA Internship Mentor: Dr. Howard Townsend, NOAA/NMFS/ST/Ecosystems, COL, Oxford, MD

NERTO Project Title: Temperature effects on juvenile black sea bass respiration



Matthew Ramirez NOAA EPP LMRCSC Graduate Fellow

Home Institution: Oregon State University

Major: Fisheries Science

NOAA Internship Mentor: Dr. Jeffrey E. Moore, CMAP Leader (CCMMAP), Marine Mammal and Turtle Division, NOAA-SWFSC, La Jolla, CA

NERTO Project Title: Integration of habitat-specific growth variation into assessment models: a case study in the Kemp's ridley sea turtle



Nicole Kleponis, NOAA EPP LMRCSC Graduate Fellow

Home Institution: University of Maryland Eastern Shore

Major: Natural Resources

NOAA Internship Mentor: Dr. Jeannette E. Zamon, NOAA-NWFS), Point Adams Research Station, Hammond, OR

NERTO Project Title: Seabird Capture and Diet Analysis



Rebecca Wenker, NOAA EPP LMRCSC Graduate Fellow

Home Institution: University of Maryland Eastern Shore

Major: Marine, Estuarine and Environmental Science

NOAA Internship Mentor: Dr. Vincent Guida, NOAA-NEFSC, J.J. Howard Lab, Sandy Hook, NJ.

NERTO Project Title: Development of alternative search strategy for assessing densities of clumped distribution species within a comprehensive image database



Shadaesha Green, NOAA EPP LMRCSC Graduate Fellow

Home Institution: IMET-UMCES

Major: Marine, Estuarine and Environmental Science

NOAA Internship Mentor: Mr. Bruce Vogt, NOAA Chesapeake Bay Office, MD

NERTO Project Title: Striped Bass Habitat Indicator for Chesapeake Bay



Shanelle Haughton, NOAA EPP LMRCSC Graduate Fellow

Home Institution: University of Maryland Eastern Shore

Major: Marine, Estuarine and Environmental Science

NOAA Internship Mentor: Dr. Pamela Jensen; NOAA-AFSC, Western Regional Center/RACE Div; Seattle, WA

NERTO Project Title: Understanding *Hematodinium* sp. in Alaskan crabs: new hosts, improved detection and health effects in a changing ocean



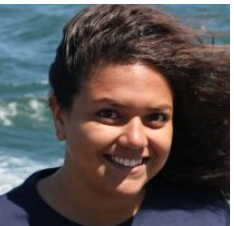
Shaneese Mackey, NOAA EPP LMRCSC Graduate Fellow

Home Institution: Savannah State University

Major: Marine Science

NOAA Internship Mentor: Dr. Ron Hill, NOAA Southeast Fisheries Science Center (SEFSC), Galveston Lab, TX

NERTO Project Title: UAS Habitat Assessment Project



Stephanie Martinez-Rivera, NOAA EPP LMRCSC Graduate Fellow

Home Institution: University of Maryland Eastern Shore

Major: Marine, Estuarine and Environmental Science

NOAA Internship Mentor: Dr. Chris Long, NOAA Alaska Fisheries Science Center (AFSC), Kodiak Lab, AK

NERTO Title: Eastern Bering Sea Crab Survey training for CSC graduate student



Wilmelie Cruz-Rivera, NOAA EPP LMRCSC Graduate Fellow

Home Institution: University of Maryland Eastern Shore

Major: Marine, Estuarine and Environmental Science

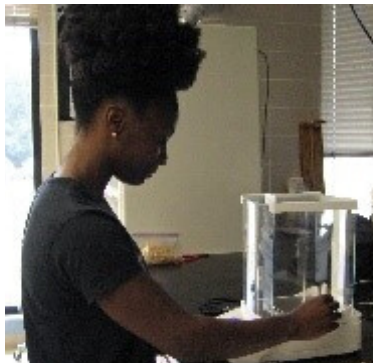
NOAA Internship Mentor: Dr. Ron Hill, NOAA Southeast Fisheries Science Center (SEFSC), Galveston Lab, TX

NERTO Project Title: Evaluation of fisheries parameters for a commercially important marine mollusk: growth rates and habitat distribution



NERTO INTERNSHIPS

Take a more in-depth look into some of our fellows' NERTO projects and experiences



Adrienne Wilson, NOAA EPP LMRCSC Graduate Fellow

Home Institution: University of Miami-RSMAS

Major: Marine Biology and Ecology

NOAA Internship Mentor(s) and Line Office, Office/Lab/Branch,

Location: Dr. Robert Allman, NOAA, Southeast Fisheries Science Center (SEFSC), Panama City, FL

Nerto Project Title: Age and Growth of Lane Snapper in the Gulf of Mexico

Abstract: The sagittal otoliths for 499 Lane Snapper (*Lutjanus synagris*) were collected, processed and aged. Samples were collected from the Gulf of Mexico, ranging from the southwest tip of Florida to the eastern portion of Texas from January 2015 to October 2017. Otoliths were sectioned, mounted to a microscope slide and aged using a compound microscope. One reader counted annuli and sub-samples were read by a second reader to ensure consistent and accurate ageing. Fork length measurements ranged from 202 mm to 495mm. The oldest fish aged was 13 years. There was a significant difference in the growth parameter estimates between males and females so they were analyzed separately. The von Bertalanffy growth parameters were for males: growth coefficient, $K = 0.462$, asymptotic length, $L_{\infty} = 378.17$, and $t_0 = -0.868$; and for females: growth coefficient, $K = 0.271$, asymptotic length, $L_{\infty} = 383.42$, and $t_0 = -2.08$.



Benjamin Alexander Frey, NOAA EPP LMRCSC Graduate Fellow

Home Institution: CBL – UMCES

Major: Marine, Estuarine and Environmental Science

NOAA Internship Mentor(s) and Line Office, Location:

Dr. Anne Richards, NOAA Northeast Fisheries Science Center (NEFSC), Woods Hole, MA

NERTO Project Title: Validation of age and growth estimates of New England and Mid-Atlantic demersal fishes using microstructural analysis of hardparts

Abstract: Monkfish (*Lophius americanus*) supports high value fisheries in the Mid-Atlantic and Southern New England. Conservative fishing quotas were imposed owing to refutation of traditional ageing methods that resulted in uncertainties in stock status.

Without accurate age interpretation or validation, serious errors in the assessment and management of fish stocks can occur. During this internship at the NMFS Northeast Fisheries Science Center (NEFSC) examined the current assessment processes including fishery-independent methods, biological sampling, age determination methods for monkfish and other species (black sea bass, haddock, yellowtail flounder, red hake and silver hake) and age-dependent stock assessment models. I participated in a 2-week leg of the Northeast Fall Bottom Trawl Survey. I trained with the NEFSC Age & Growth group reviewing ageing methods for these species. I met with the assessment leads for each species, reviewing how age-dependent assessments are used in establishing biological reference points and evaluating stock status. My thesis research will continue to involve my NEFSC mentors as I develop novel approaches to age monkfish using trace element micro-constituent analysis of hardparts.



Kasondra Rubalcava, NOAA EPP LMRCSC Graduate Fellow

Home Institution: University of Maryland Eastern Shore

Major: Marine, Estuarine and Environmental Science

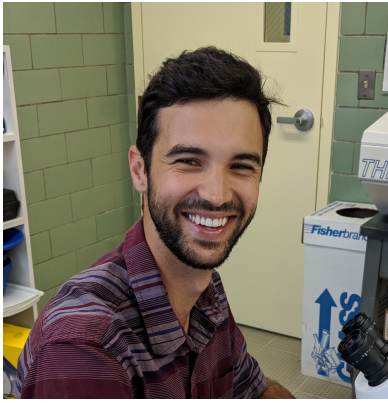
NOAA Internship Mentor(s) and Line Office, Location:

Dr. Howard Townsend, NOAA/NMFS/ST/Ecosystems, Cooperative Oxford Lab, Oxford, MD

NERTO Project Title: Development of a Maryland Coastal Bays Ecosystem Model to Assess the Influence of Climatic Factors on

Biomass Distributions of Fish and Macroinvertebrates, Food Web Linkages and Community Structure.

Abstract: The Maryland Coastal Bays (MCBs) are a system of shallow lagoons on the US East Coast connected to the Atlantic Ocean by two inlets. They among the most ecologically diverse estuaries on the east coast and serve as a nursery for many commercially important species such as black sea bass, summer flounder and blue crabs. Due to their significant use by the public, MCBs are vulnerable to environmental and human pressures. Understanding how environmental factors affect the ecosystem can help in managing a changing ecosystem. We created a fisheries ecosystem model consisting of 22 functional groups and species from the MCBs using Ecopath with Ecosim (EwE) software to explore influence of environmental factors on biomass distributions of key fish species including summer flounder, black sea bass, bay anchovy, weakfish, and blue crab. The biomass input data used for Ecopath was estimated from abundance index data from the Maryland Department of Natural Resources (MDDNR) Coastal Bays Fisheries Investigation Trawl and Beach Seine Survey. Time series data imported from 1990-2017 through the MDDNR survey was used to fit the model. Climate change scenarios were run using changes in temperature and salinity to analyze the effects they have on key species in the MCBs. The results of this study will aid in management of the MCBs.



Brian Galvez, NOAA EPP LMRCSC Graduate Fellow

Home Institution: Delaware State University

Major: Natural Resources

NOAA Internship Mentor(s) and Line Office, Location:

Dr. Howard Townsend, NOAA Chesapeake Bay Office,
Cooperative Oxford Laboratory, Oxford, MD.

NERTO Project Title: Determining diet of Delaware Bay weakfish
using stomach content and stable isotope analysis

Abstract: The weakfish (*Cynoscion regalis*) is a valuable commercial and recreational fish species that primarily occurs from North Carolina to New York. The fishery is depleted and has not rebounded due to unknown causes of elevated rates of natural mortality. We applied stable isotope and stomach content analyses to examine the diet of weakfish throughout the Delaware Bay from late spring to early fall in 2017 (May through October). Using these methods, our goal was to answer questions regarding the trophic ecology of weakfish including prey availability, prey preference, and prey origin. The bay was separated into three parts along the salinity gradient and weakfish were separated into three size classes representing ontogenetic shifts in diet (small: 0-60, medium-60: 100, large: 100-137 mm SL). We found that mysid shrimp, amphipods, and unidentified fish dominated the diet of weakfish throughout the summer and early fall. Examining stomach content by season, the percent frequency (%F) of mysid shrimp decreased significantly in the middle bay from late spring to summer (from 90 %F to ~60 %F) with a concurrent increase in amphipod consumption in the same period on the Delaware side of the bay (from ~15 %F to 90 %F). The opposite relationship between amphipod and mysid shrimp consumption was recorded from summer to fall. Stable isotope data was analyzed using generalized linear models (GLMs) and generalized linear mixed models (GLMMs) for each isotope by each size class weakfish with the variables of bay location, season, and state. The goal of the GLM and GLMM results was to inform the setup of future stable isotope mixing models in terms of spatiotemporal scales.



Shadaesha Green, NOAA EPP LMRCSC Graduate Fellow

Home Institution: IMET - UMCES

Major: Marine, Estuarine and Environmental Science Program

NOAA Internship Mentor(s) and Line Office, Location:

Mr. Bruce Vogt, NOAA Chesapeake Bay Office, MD

NERTO Project Title: Striped Bass Habitat Indicator for
Chesapeake Bay

Abstract: The Chesapeake Bay striped bass (rockfish) is an iconic species. The Chesapeake Bay serves as the largest nursery habitat for Atlantic striped bass. The main objective of this study was to improve the understanding of nursery habitat areas for juvenile striped

bass that support survival and recruitment to the adult population. This project was two-fold: (1) develop a conceptual model indicating factors impacting juvenile striped bass nursery habitat and (2) prepare the 'Chesapeake Bay striped bass nursery habitat assessment' Request-for-Proposal (RFP) for submission to the Chesapeake Bay Trust. To complete these tasks interviews were conducted with a variety of scientists and fishery managers in the Chesapeake Bay region to gather their insight on factors influencing nursery habitat for juvenile striped bass.



LaTreese S. Denson, NOAA EPP LMRCSC Graduate Fellow

Home Institution: University of Miami, RSMAS

Major: Marine Biology and Ecology

NOAA Internship Mentor(s) and Line Office, Location:

Dr. James Thorson, NOAA, Alaska Fisheries Science Center (AFSC),
Habitat and Ecosystem Process Research (HEPR), Seattle, WA

NERTO Project Title: Environmental influences on indices of abundance for King Mackerel in the Gulf of Mexico examined through spatiotemporal geostatistical models

Abstract: During the NERTO experience from September to December 2018, I developed skills in random effects modeling to understand spatial processes in fish population dynamics, here-in referred to as geostatistical modeling. These models were tested using larval count data from the Southeast Area Monitoring and Assessment Program (SEAMAP) Fall Plankton Survey. Originally, a non-geostatistical model was fit to the data to derive an index of abundance for spawning stock biomass; however, the original index did not explicitly account for the uncertainty in spatial variation on population density or catchability. Failing to account for this source of uncertainty in a model, underestimates the overall uncertainty of an index of abundance. During the NERTO I began to explore the effect of spatial and spatiotemporal variability using a geostatistical model on King mackerel ichthyoplankton abundance indices and density distribution. I began with the use of delta-log normal models for zero inflated data. As expected, considering spatial variability creates a better model according to the Akaike Information Criterion. Additionally, adding spatial and temporal variability to the original model only slightly increases the standard deviation (uncertainty) of the index of abundance. Future research will include using Poisson-link models to better describe the error structure and variability in the data. I will also further investigate the individual contribution of the original covariates when considering spatial structure as well as environmental covariates such as temperature and chlorophyll.



Matthew Ramirez NOAA EPP LMRCSC Graduate Fellow

Home Institution: Oregon State University

Major: Fisheries Science

NOAA Internship Mentor(s) and Line Office, Location:

Dr. Jeffrey E. Moore, CMAP Leader (CCMMAP), Marine Mammal and Turtle Division, NOAA-SWFS, La Jolla, CA

NERTO Project Title: Integration of habitat-specific growth variation into assessment models: a case study in the Kemp's ridley sea turtle

Abstract: Spatiotemporal variation in demographic parameters can strongly influence a species' population dynamics but is generally not included in sea turtle population models due in part to lack of sufficient data. For example, Kemp's ridley sea turtles that inhabit the U.S. Atlantic Coast grow slower than conspecifics that inhabit the U.S. Gulf of Mexico (GoM) Coast, which may lead to differences in age at maturation for individuals or whole cohorts. To evaluate the influence of this variation on Kemp's ridley population dynamics, this NERTO experience focused on developing an improved age-structured population model for Kemp's ridley sea turtles that incorporates habitat-specific vital rate estimates (growth, survival). Using a ~30 year dataset of somatic growth rates obtained through skeletochronology, we developed habitat-specific (Atlantic, GoM) maturation schedules for this species. In addition, ongoing analyses are using 20 years of stranding length frequency data collected through the Sea Turtle Stranding and Salvage Network to estimate habitat-specific survival rates that will be included in the model. Ongoing analyses will examine model sensitivity to changes in stage-and habitat-specific model parameters. This project will help answer critical question about the contribution of somatic growth variation, habitat use, and Atlantic turtles, which have been excluded from all existing population models, to Kemp's ridley population dynamics.



Shaneese Mackey, NOAA EPP LMRCSC Graduate Fellow

Home Institution: Savannah State University

Major: Marine Science

NOAA Internship Mentor(s) and Line Office, Location:

Dr. Ron Hill, NOAA-SEFSC, Galveston Lab, TX

NERTO Project Title: UAS Habitat Assessment Project

Abstract: Advancing technology like unmanned aircrafts (UA) can be used by scientists to collect information about the abundance or density of a species that would normally require human efforts. The use of UAs increases field efficiency and decreases the amount of effort while being less invasive to the environment. The purpose of this study was to determine the feasibility of using unmanned aerial system (UAS) to assess oyster reefs and wetland habitat. Images of oyster reefs were collected using the APH-28 Hexa-copter during low tide. Images were stored on an external hard drive, uploaded to Drone2Map for stitching, then brought into ArcGIS 10.6 to perform spatial analysis using the Hogland method. Using the Hogland method on obtained UA images would increase the estimation of potential fish habitat at a resolution of 1m. The findings of this project would help project managers be less invasive to the environment while obtaining data on the species and habitat.

STUDENT SPOTLIGHT



India Oliver

**NOAA EPP
Undergraduate
Scholarship Recipient
Recaps Her
Community Service
Project**



INDIA OLIVER **NOAA EPP LMRSC UNDERGRADUATE**



As a recipient of the NOAA EPP Undergraduate Scholarship, I was given the opportunity of organizing and implementing a public service engagement project. I decided that the best option for me was to host monthly community clean-ups, for it would allow for me to service my local community, in addition to getting my peers involved in giving back.

In September 2019, my first community clean-up was hosted in Princess Anne, Maryland at the Manokin River Park. I chose the Manokin River Park because the location is a public park that the residents of Princess Anne frequently attend and upon visiting the location, I found it to be in need of some maintenance. After soliciting individuals to help in the endeavor, a total of 28 people participated. We picked up trash from the park, near the river, and the surrounding areas.

The items collected were then separated between recyclables and non-recyclables, recorded, and submitted to the Ocean Conservancy.

I collected the data to submit to the Ocean Conservancy because the organization collects the information and puts it into a database that is accessible to the public. The data are used to inform others on how much trash is being disposed of and what kinds of items are being collected.

Collecting data about the trash can give us more insight on the types of trash items affecting our environment and the organisms that live in it. Knowing these things can inform and inspire others to get involved and create alternative ways to dispose of waste that are environmentally friendly.

The Manokin River Park was only the first of my clean up events. In October, I hosted a clean up on my campus (University of Maryland Eastern Shore) where we collected all the trash found outside the day after a university event. A total of seven students participated. In November, I hosted my last clean up with seven participants. We cleaned debris found on campus, around the ponds, and in the residential areas, for they were the locations that needed the most attention.

When contemplating locations to host my clean up events, I thought it was important that I not only maintain the aesthetics of my campus, but to also engage with our community and educate others on the importance of keeping our environment free from the garbage, hence I chose a local community park to clean. In addition, I wanted my project to be in alignment with NOAA's mission of protecting the environment. Educating others on pollution is important because the improper disposal of garbage can cause animals to mistake items such as plastic and glass as food, or use them to build their shelter, which could be hazardous and detrimental.

Garbage does not only affect animals, but it can harm humans as well. As the trash begins to decompose, remaining particles can end up in our food and have adverse effects on our health. The organization and implementation of my community service events has made a lasting impact on me by affording me the opportunity to teach others how to keep our communities clean and educate them on the negative impacts of pollution. The public service project not only has taught me how to be a leader, but it has allowed for me to inspire others to start their own projects and work as a team to achieve a common goal. With the new skills that I have gained, I look forward to continuing to inspire change in my community.

PARTNER INSTITUTION HIGHLIGHTS

Our partner institution, Hampton University, recently received some high profile visitors. Details of the visit are provided below.

SSU HOSTS A SPECIAL GUEST



NOAA Rear
Admiral Visits
Savannah State
University



In the Fall of 2019, NOAA Coast Survey Director, Rear Admiral Shepard M. Smith, visited the Living Marine Resources Cooperative Science Center's (LMRCSC) partner institution, Hampton University (HU). Admiral Smith was in the Norfolk area visiting local NOAA facilities, and while in the vicinity, the Acting Assistant Deputy Administrator made a stop at the HBCU to speak about the mission of NOAA and its many career opportunities, including those with the NOAA Commissioned Officer Corps (NOAA Corps) program.

NOAA Corps, which RDML Smith is a part of, is a commissioned uniformed services program that is serviced by NOAA. The 321 officer initiative uses its service and scientific expertise to help lead NOAA in meeting its many goals, including ship and land based assignments that support the diverse missions of the agency. RDML Smith's presentation to students and university faculty, included him discussing additional opportunities and the extensive goals of NOAA.

Admiral Smith was hosted by Dr. Deidre Gibson, who serves as Associate Professor and Department Chair, as well as the LMRCSC Program Director at HU. Dr. Gibson provided the Admiral with a tour of the campus and introduced him to various groups in the STEM fields. Hampton University's Remoting Sensing Cooperative Science Center partners also held a meeting and the elite guest witnessed a weather balloon watch during his visit.

Before the tour concluded, Dr. Gibson provided RDML Smith with literature expounding upon the mission and the work of the LMRCSC. In addition, he was shown the many posters that the Center's students created, which led to the discussion of how NOAA could provide continued and increased support to the LMRCSC and Hampton University as a whole.

The LMRCSC thanks Admiral Smith for his visit to our partner institution. His invaluable time spent speaking with our HU students and administrators was very impactful. We look forward to a continued and increased partnership in the future!

PARTNER INSTITUTION HIGHLIGHTS



LMRCSC Evaluators
Visit Savannah State
University



LMRCSC EVALUATION TEAM

On January 17, 2020 the LMRCSC evaluation team from the College of Exploration visited Savannah State University as part of their site visit evaluation process. Dr. Howard Walters, Dr. Tina Bishop and Mr. Peter Tuddenham were kindly hosted by Dr. Dionne Hoskins-Brown and Dr. Victoria Young for an enjoyable and informative visit. The purpose of the visit was to gain a more in-depth understanding of the LMRCSC from the viewpoint of all those involved with the project at SSU. The evaluation team aimed to get acquainted with the university, to have personal interactions with students, faculty, and staff regarding their LMRCSC experiences, and to appreciate the local environment and context of marine science in Savannah.

The evaluators were given a tour of Savannah State's Marine Science Center (Livingston Facilities) as well as a main campus tour, including the Marine Biology Building and the docks. The highlights of the day were the meetings with the LMRCSC students—undergraduates, graduate students, post-doctoral research associate—and the faculty. It was inspiring to hear the students' stories and to learn about their pathways into the marine sciences and their choice to attend SSU. It was especially noteworthy to hear how the students got interested in fish and fisheries. The evaluators were provided with details about the students' course work, research interests, and plans and career aspirations.

The evaluators inquired about the benefits of the LMRCSC, which elicited a variety of positive statements. The students overall stressed the significant attraction of ultimately working with NOAA.

The faculty helped the evaluation team understand more about their personal backgrounds with the Center; about working within SSU; and about the professional benefits they derived from the LMRCSC. The faculty also helped pinpoint project concerns and made suggestions for improvement.

The evaluation team always values the opportunity to get on site with project members and was grateful for this chance to explore SSU in the context of the LMRCSC. The evaluation team appreciated this satisfying and productive day, which enhanced personal connections to the LMRCSC community at SSU and provided helpful feedback about the Center. The evaluation team thanks all those involved for their time and interest in meeting.



NOAA LIVING MARINE RESOURCES COOPERATIVE SCIENCE CENTER
IS SUPPORTED BY NOAA OFFICE OF EDUCATION, EDUCATIONAL PARTNERSHIP PROGRAM,
AWARD #: NA16SEC481007* TO THE UNIVERSITY OF MARYLAND EASTERN SHORE



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