

THE GRADUATE PROGRAM IN MARINE BIOLOGY TURNED 50!



The Graduate Program in Marine Biology at the College of Charleston began its first class in the fall of 1973, and this past October, the program celebrated its 50th anniversary! Two events were held on October 21st and 22nd to celebrate this milestone and to foster camaraderie among alumni, current students, staff, and past and present faculty.

The Friday night event was an informal family-friendly oyster roast and cookout held in the DNR outdoor classroom that drew over 175 attendees. Activities included a raffle and a silent auction, with proceeds going to the MBGSA, and a “50 years of GPMB trivia” contest.

The Saturday night event was a more formal Lowcountry Boil held in the CofC Cistern Yard. Live music was provided by the Jakob Kendrick Band (a GPMB alumni!). The Graduate School awarded Craig Plante a plaque to celebrate his 16 years (and counting) of service as Director of the Graduate Program in Marine Biology. A good time was had by all!

Here’s to another 50 years!



GML STAFF

Jack DiTullio
GML Director &
Professor of Biology

Craig Plante
GPMB Director &
Professor of Biology

Greg Townsley
Laboratory Manager
Newsletter Editor

Peter Meier
Marine Operations Manager

Norma Salcedo
Administrative Coordinator

Kristy Hill-Spanik
Molecular Core
Facility Manager

Grice Marine Laboratory
205 Fort Johnson Rd.
Charleston, SC 29412
843.953.9200

gricemarinelab.cofc.edu

Graduate Program in
Marine Biology
marinebiology.cofc.edu



facebook.com/GMLCofC
facebook.com/GPMBCoFC



@GriceMarineLab



@gricelab



blogs.charleston.edu/
gricemarinelab

UNDERGRAD RESEARCH SPOTLIGHT

Lilah Grace Elnaggar

I am currently a senior studying Marine Biology, with minors in Environmental Sustainability Studies and Music. With support from the CofC SURF Grant, I, along with Kristy Hill-Spanik and Dr. Craig Plante are completing research in the field of microbial ecology. Our work encompasses the study of marine mollusks and the presence of certain bacteria found in their gut microbiome. Through field collection, dissection, and DNA extraction, we hope to help the Charleston science community understand the abundance of the bacteria *Mycoplasma* in local mollusk species, with the ultimate aim of creating a metabarcoding library. Our examination of this species and its numerous relationships with other biota will enhance our understanding of the connection between bacteria and animal, while also providing context as to what factors contribute to an overall dynamic and balanced ecosystem.



Maya Mylott & Alex Barron



Through the support of the School of Science and Mathematics and the CofC SURF Grant, we have been fortunate to spend the summer working on our project that is looking at the effects of freshwater salinization on the trophic relationships between amphibians, their food source (algae), and their predators (dragonfly nymphs) within experimental mesocosms. Along with Dr. Allison Welch and GPMB graduate student Cole Miller, we will be monitoring the tanks located on GML property over the summer to examine biomass transfer between these organisms. Sea-level rise and flooding can cause an influx of saltwater into freshwater habitats, which can affect the survival, growth, and behavior of freshwater organisms. By testing how saltwater affects the interactions between these organisms, we can begin to understand how sea-level rise and flooding may affect freshwater ecosystems in the future. This research project will provide an opportunity for us to expand our scientific skills and gain a first-hand look at trophic interactions within our tanks. We plan to continue this research into the fall and are excited to see the results of the study.

Kora Hansen

I am currently a rising senior at CofC majoring in Biology. Mentor Bob Podolsky and I received a SURF grant and SSME funding this summer to research the life history of the eastern mud snail, *Ilyanassa obsoleta*. Life history theory describes how an organism allocates resources at different stages of the life cycle, and the tradeoff between egg size and number is a fundamental focus of this theory. Latitude and temperature differences can significantly influence these early life history traits, such as an increase in egg size expected at colder latitudes. My work involves investigating local variation in embryo traits including capsule size, egg size, egg number, and egg energy content that will be compared to a larger study in the Podolsky lab analyzing latitudinal variation of these traits. Early stages, including egg and larval development, are particularly vulnerable to environmental shifts such as current warming ocean temperatures. It is important to understand if latitude predominately determines the tradeoff between egg size and number or if it is other environmental factors that may vary locally given these current temperature changes.



Emma Fredenburg

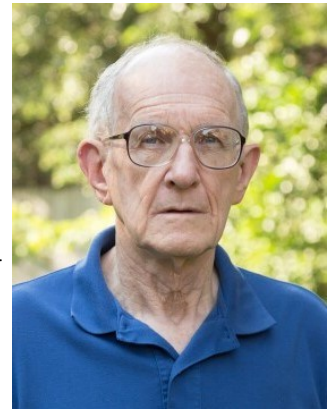
I am currently a junior at the College of Charleston in the Honors College majoring in Marine Biology and minoring in Environmental Sustainability. This summer, I had the opportunity to conduct research on the impact of elevated oceanic temperatures on open ocean ecosystems, primarily focusing on marine cyanobacterial infections from cyanophages. My project directly tested how temperature impacts the resistivity of a host cyanobacterial cell to viral infection. This is important to understand because of the ecological dominance of cyanobacteria in the open ocean and their impact on marine biogeochemical cycles. Working alongside faculty members Jack DiTullio and Heather Fullerton, I've gained valuable insights into oceanography and microbiology. In addition, this research has allowed me to gain hands-on experience in various research areas such as developing and testing hypotheses, learning culturing techniques of marine cyanobacteria and cyanophages, performing bioassays, conducting flow cytometric measurements, performing DNA/RNA extractions, and testing for statistical significance.

REMEMBERING WILLIAM D. ANDERSON JR. (1933-2024)

PIONEER IN SYSTEMATIC ICHTHYOLOGY

On July 17, 2024, the Grice Marine Laboratory (GML) family lost a true legend and the last of its founding members, Professor Emeritus William D. Anderson, Jr. We offer our sincere condolences to his son William D. Anderson III, his daughter Beth Anderson, and their families (including 5 grandchildren). Bill was predeceased by his wife of 58 years, Barbara Portia Sarratt Anderson, who died in 2021.

Bill was born on June 4, 1933, in Columbia, SC. He attended the University of South Carolina earning his B.S. (1953), M.S. (1955), and Ph.D. (1960) degrees. Bill was an avid baseball fan and loved his USC Gamecocks. Bill accepted a position as an Assistant Professor of Biology at Susquehanna University in Pennsylvania in 1960. He then worked for the US Fish and Wildlife Service from 1961-1965 in Brunswick, GA before accepting faculty positions at the University of Florida (1965-1966) and the University of Chattanooga, TN (1966-1969). In 1969, he came to the College of Charleston's Biology Department and was on the faculty when the "new" GML wing (initially, The Fort Johnson Marine Biological Laboratory) was built in 1975. He taught various classes including histology, evolution, genetics, biology of fishes, and ichthyology until he retired in 1996 and then served as Professor Emeritus, working almost daily in his GML office until fall semester, 2023.



Recently, the American Society of Ichthyologists and Herpetologists awarded Bill the Robert H. Gibbs, Jr. Memorial Award for Excellence in Systematic Ichthyology for his more than 54 years of contributions to systematic ichthyology. The prize is awarded annually for "an outstanding body of published work in systematic ichthyology."

Bill was considered one of the world's leading taxonomic experts on several major groups of perciform fishes particularly of the families Symphysanodontidae, Callanthiidae, Serranidae, and Lutjanidae. Beginning in 1957, his work on these groups resulted in over 90 publications, including dozens of new-species descriptions, synonymies, revisions, taxonomic keys, and chapters in the Food and Agricultural Organization's species identification guides. Bill also co-authored several books, especially noteworthy of which is *Natural History Investigations in South Carolina from Colonial Times to the Present* (by Albert E. Sanders and William D. Anderson, Jr., 1999) and published 20 book reviews while he was the ichthyology book review editor for *Copeia* (2000-2003). Remarkably, Bill continued working on manuscripts right up to his passing.

In addition to his impressive body of published work, Bill was also responsible for establishing the preserved specimen reference collection (>100,000 specimens) housed at GML. As a testament to Bill's impact at GML, the marine biology graduate student association initiated the William D. Anderson Lecture Series (WALS) in fall, 2023.

We will miss Bill's indomitable spirit that will forever grace the Grice Marine Lab hallways.

GPMB GRADUATE STUDENT AWARDS

Jesi Gibbs was awarded a Joanna Deepwater Fellowship and a Barans Marine Biology Fellowship. She also won first place at the CofC Three Minute (3MT) competition

Schuyler Wilson was awarded a Kathryn D. Sullivan Research Fellowship

Chris Carbon received an Innovation Grant from the Center of Resilience Excellence (CORE) of South Carolina

Jess Kusher was awarded a Joanna Deepwater Fellowship and a Knauss Fellowship

Abbey Davis and **Mikayla Sonnenfeld** and **Hannah Korper** were awarded Marine Genomics Fellowships

Ashley Bobnar, **Grace Richa**, **Hannah Linde** and **Dimitrios Kyridis** received CofC Presidential Summer Research Awards

Hayden Bessette received a Joanna Deepwater Fellowship award and was nominated for membership in the Sigma Xi Scientific Honor Society

Maggie Knight was first runner-up and People's Choice winner at the 2023 3MT competition in November. She was also granted a Southern Association of Marine Laboratories Student Support Award and tied for 1st place at the Graduate Research Poster Session

Kelly Cusick was awarded an NSF GRFP Fellowship, tied for 1st place at the Graduate Research Poster Session, and was selected for an NSF funded Cyber training Program at UNCW

Camille Berardone received a Marine Genomics Fellowship

FACULTY NOTES

Beers Lab: Our lab continues to investigate the physiological responses and energetics of marine animals to various environmental stressors. GPMB student **Kerryanne Litzenberg** successfully defended her thesis on the physiological effects of age and temperature on the Atlantic horseshoe crab in the fall. She then presented our collaborative work with colleagues **Daniel Sasson** (SCDNR) and **Fabio Casu** (NIST) at the Society for Integrative and Comparative Biology conference in Seattle in January. Kerryanne has since relocated to North Carolina where she has started a new position as a research technician for NOAA's NC Coastal Reserve lab in Beaufort. And, as if that wasn't enough, she also got married this past spring - what a great year for Kerryanne! Along other research lines, we continue to work with elasmobranchs in collaboration with colleague **Bryan Frazier** (SCDNR). GPMB student **Hayden Bessette** is in the final phases of his thesis project analyzing the effects of rod-and-reel fishing and environmental factors (e.g., temperature and dissolved oxygen) on the post-release mortality and physiology of Atlantic sharpnose sharks and bonnethead. We anticipate that Hayden will be wrapping up his work very soon! On the undergraduate level, we said good-bye this spring to graduated Biology student **Kayla Buerger**. Kayla was only in our lab a short time but gave great assistance with various aspects of our horseshoe crab work. She is now pursuing veterinary school and we wish her the best of luck. Finally, as some students move on, others move in. We welcomed new GPMB student **Izzy Gustafson** onto our team this past spring. Izzy is in the early stages of planning her thesis research that will involve looking at thermal response and resiliency of horseshoe crabs. It has been another productive year, and we look forward to the new lines of scientific inquiry ahead!

DiTullio Lab: During the 2023-2024 academic year, the lab's research activities focused on analyzing samples and publishing data from our NSF-funded polar expeditions and our recent NASA award on Charleston Harbor water quality and carbon cycling. Current laboratory members include: (1) research assistant and lab manager **Nicole Schanke**, (2) research associate, **Dr. Bobbie Lyon**, (3) GPMB graduate students **Ethan Johnson**, **Mikayla Sonnenfeld**, **Jess Kushner**, and 1st year grad student **Schuyler Wilson**. (4) In May 2024, CofC marine biology undergraduate students **Izzi Schutz** and **Kade Rice** graduated. They both presented posters at the CofC EXPO in April and completed their Bachelor's Essays in Marine Biology. Congratulations to Schuyler who was awarded the NASA Kathryn D. Sullivan Earth and Marine Science Fellowship to complete her MS thesis research project on the spectral imaging of oceanic phytoplankton species. (5) This summer, undergraduate marine biology interns **Emma Fredenburg** (INBRE summer internship; co-mentored with **Dr. Heather Fullerton**), and **Bailey Horn** (N. Schanke, advisor) are working in our lab on their Bachelor's Essay research. A new 5-year NOAA grant (\$1.325M) was awarded to GML (DiTullio and McElroy, PI's) to study water quality and biogeochemistry in Charleston coastal waters. The new grant will start in September 2024. This summer Nicole participated in the NSF sponsored IOOS workshop at

UNCW and Jack attended the NSF sponsored OCB Workshop at WHOI. Four manuscripts are currently under review at *Nature Geosciences* (Kell et al), *Nature Microbiology* (Füssy et al.), *Biogeosciences* (Kell et al.) and *Limnology and Oceanography* (Schanke and DiTullio). Please see the DiTullio webpage on the GML and/or CofC Biology Dept faculty websites for manuscript updates and citations.

Freeman Lab: We have been working locally this year with research led by GPMB students **Ryan Ware** and **Piper Zola**. Ryan is using 3-D printed settlement panels to assess the impact of surface complexity on the diversity and community composition of sessile and motile epifaunal organisms. Piper is determining the prevalence of bio-eroding or "boring" sponges on oyster reefs around Charleston and using manipulative experiments to study the infection pathway and bio-erosion rate. CofC undergraduate student **Josie Shostak** has been working with **Kristina Hill-Spanik** to verify her identifications of freshwater sponge species from around South Carolina. Josie gave an oral presentation on this research at the Benthic Ecology Meeting and is working on a manuscript to highlight the 13 species she has identified. **Murphy Hagen** has been dissecting freshwater sponges to study their interactions with aquatic insects, and **Avi Strange** has successfully "hatched" sponge gemmules and grown baby sponges for future experiments. We had two recent publications (Coral Reefs and Communications Biology) on sponge work in the Caribbean and have a paper on sponge contributions to dissolved organic matter pools on coral reefs in review.

Harold Lab: **Mikayla Baird** has started her Master's thesis research on dietary analysis of the Silver Perch, *Bairdiella chrysoura*, and will be examining the entire life history of the species from larval to adult stages. The generic name was not a factor in Mikayla's choice of topic. Research also continues on diversity and abundance of larval and juvenile fishes, the focus of **Carly Lynn Strange's** thesis research. Three undergraduate students (**Evan Marque**, **Lexie Delviscio**, and **Sydney Bates**) completed their Bachelor's Essay in Marine Biology (BIOL 498) in the general area of fish ecology (LD and SB) and skeletal development in larval sciaenids (EM). All three presented posters at the annual EXPO session. Tony was awarded the Distinguished Undergraduate Mentor Award this year. Lab research of a systematic nature continues on the pelagic cod-like fishes of the family Bregmacerotidae and deep-sea hatchetfishes (Sternoptychidae). Tony presented some of the *Bregmaceros* results at the Indo-Pacific Fishes Conference in Auckland, New Zealand in November 2023. Publications included an FAO volume on Mesopelagic Fishes of the Western Indian Ocean with **E. Mostarda** and others and a description of a new species of *Bregmaceros* from the eastern Pacific with **Andy Baltzegar** (GPMB alumnus).

Hughes Lab: This year we celebrated **Rachel Probstko's** successful thesis defense (GPMB - Effects of a blue crab predator (*Callinectes sapidus*) on the activity, foraging, and social interactions of snapping shrimp (*Alpheus angulosus*)); Rachel also gave excellent talks on her work exploring social behavior and the ecology of fear at both the

(Continued on page 5)

FACULTY NOTES

(Continued from page 4)

Benthic Ecology meeting, and the Animal Behavior Society annual conference. Meanwhile, **Jesi Gibbs** (GPMB) got up and running on her project exploring the perception of pain in decapod crustaceans, both by staining for neurotransmitters associated with the central processing of pain, working in **Mike Rusio's** lab (CofC – Psychology), and doing the ground work for behavioral learning trials. Jesi presented posters of her work so far at both the Benthic Ecology Meeting and the Animal Behavior Society annual conference. Undergraduate student **Elizabeth Finkelstein** re-started a long-sidelined project exploring melanin-based plumage variation and territorial aggression in Song Sparrows, and Madison Cantrell completed characterization of the collection of the substantial bird egg collection, generously donated by the family of Thomas Pinckney Rutledge Rivers. Melissa, on the other hand, spent a ridiculous amount of time in the past year as Program Officer for the Animal Behavior Society annual conference, responsible for scheduling 7 plenaries, 5 workshops, 6 symposia, and over 260 additional contributed talks in 33 concurrent sessions, and 140 posters in 2 sessions, plus 10 lunch meetings, 1 dinner meeting, 1 social, and a live podcast episode; the conference was attended by over 600 scientists representing over 25 countries.

Janech Lab: This year the Janech Lab has been busy studying organisms across the size spectrum, from bacteria to sea turtles to dolphins, manatees, and sea lions with partners from the Hollings Marine Laboratory. Third year graduate student **Kelly Cusick** is finishing her proteomic characterization of bottlenose dolphin urine in hopes of laying a foundation from which to discover protein markers of kidney disease. **Camille Berardone** joined the lab this year and is working with a University of Florida veterinary pathologist to determine changes in the blood proteome of Kemp's Ridley sea turtles exposed to oil from the Gulf of Mexico Deep Water Horizon spill. In July 2024, **Gautam Ghosh**, graduate of the Janech lab, had his thesis research on California Sea Lions published in the *Journal of Proteome Research*. In addition to being accepted, his research paper was selected for the cover of the journal. The Janech laboratory has also partnered with investigators at Hollings Marine Laboratory (NOAA & SCDNR) and University of South Carolina to study the effects of ozone nanobubbles (smaller than 1 micron) on bacteria, nutrients, and flounder. Tiny bubbles with ozone tend to stop bacteria from growing, and so far do not seem to harm multicellular organisms. This technology is being actively researched for potential applications including industry.



Plante Lab: Sampling began for the North Inlet Benthic Microalgae Elevation Project (NIBMEP). This is an NSF-funded project in collaboration with GPMB alum **Jay Pinckney** and other USC researchers. NIBMEP's main goal is to measure estuarine net primary production by benthic microalgae along the intertidal elevation gradient to determine their contribution to overall estuarine productivity. Our lab's part will be to characterize the diatom assemblage and other microbial groups at six elevations (along 5 transects) seasonally over three years. Metabarcoding and high-throughput DNA sequencing will be employed for microbial community analysis. Another goal of the project is to predict productivity under various sea-level rise scenarios. CofC undergraduate, **Becca Hauser**, finished her project testing the influence of relic DNA (free DNA or DNA within dead cells) on the molecular characterization of benthic microalgae. She presented results at CofC's Research EXPO and at the 2024 Benthic Ecology Meeting showing that commonly-employed molecular methods misrepresent actual microbial communities in sediments. Becca completed her Bachelor's Essay and graduated in May. A new CofC undergraduate student, **Lilah Grace Elnaggar**, started work in the lab in May as a Summer Undergraduate Research with Faculty (SURF) fellow. Her project is focused on the abundance and role of the bacterial genus *Mycoplasma* in marine mollusks.

Podolsky Lab: During this sabbatical year, Bob began a project looking at geographic patterns of life-history variation in the Eastern mud snail (*Ilyanassa obsoleta*). The initial goal is to document changes in reproductive investment in populations collected from a series of latitudes ranging from Florida to Maine. Life history theory predicts latitudinal changes in investment per egg, and previous work on physiological constraints associated with encapsulation of egg clutches predicts changes in how eggs will be divided among capsules. **Kora Hansen**, a new undergrad in the lab, is working on the project as part of her Bachelor's Essay, focusing on spatial and temporal variation in these life history parameters in 5 mud snail populations local to Charleston, to provide a picture of small-scale vs. large scale geographic variation. Undergrad **Zoe Willis** is continuing work on characteristics of crab cuticle during recovery from molt under different CO₂ conditions, comparing both pinch force as a performance measure and mineral composition, working in collaboration with **Kate Mullaugh** in Chemistry. Zoe's poster won the top award for Biology at CofC EXPO. Grad student **Ray Radick** (co-advised with **Heather Spalding**) is wrapping up her extensive work on invertebrate communities inhabiting invasive and native algal mats in the northwestern Hawaiian Islands. Her presentation won the Lewin award at the Psychological Society of America meeting. Finally, undergrad **Layne Leggett** completed a Bachelor's Essay on the role of microplastics in contaminant ingestion by echinoderm larvae, and is headed to a graduate program at the University of South Florida.

(Continued on page 6)

FACULTY NOTES

(Continued from page 5)

Sancho Lab: This year was centered on a sabbatical leave for Gorka Sancho and the fish ecology lab was able to hit the road. Having graduated three Master's students the year before, Gorka was able to travel cross-country to Oregon State University in Corvallis to collaborate with Drs. **Kristen Grorud-Colvert** and **Jenna Sullivan-Stack**, two experts in the design, implementation and evaluation of Marine Protected Areas. Being able to meet with younger colleagues and discuss ocean conservation approaches with west coast experts planted the seeds for a new effort to gather scientific support for establishing a new protected area in the Blake Plateau off the South Carolina coastline (www.nrdc.org/sites/default/files/2024-06/scientists-letter-blake-plateau-20240531.pdf). While in Oregon, Gorka was also able to continue his collaboration with Dr. **Miguel Goni** on sampling large particulate organic carbon in both marine and freshwater habitats. A new scientific study was published in the Journal of Fish Biology in collaboration with **Grace Hancock** and **Santiago Salinas** from Kalamazoo College on the influence of temperature oscillations on the sex determination of Atlantic silversides, based on fishes collected right behind the Grice Marine Lab. A presentation of these findings resulted in a "Best Presentation Award" at the College of Charleston Darwin Week symposium. Gorka continued to work with **Barbara Beckingham** (CofC - Geology)

and **Joey Ballinger** (SCDNR) on the ingestion of microplastics by coastal fishes in South Carolina, and data showing newly described geographic variability of microplastic ingestion patterns across different Lowcountry estuaries were presented in multiple professional symposia.

Sotka Lab: The Sotka lab continues to work on invasive species associated with the Pacific oyster and on the population genetics of corals in our National Parks. GPMB student **Adam Ziegler** completed his Masters degree, submitted his thesis for publication, and will be starting a PhD in Genetics at the University of Arizona in Fall 2025. **Emma Mathew** (CofC MBIO undergraduate) started working in the lab on the link between an invasive seaweed *Gracilaria vermiculophylla* and Vibrio bacteria, which can accumulate in shellfish and cause human health concerns. **Dallas Crowder** (CofC MBIO undergraduate) began work on eDNA quantification of fish and shark species in Charleston Harbor. Erik renewed his course on the Biology of Invertebrates study abroad program, which is now hosted by the Central Caribbean Marine Institute on Little Cayman Island. He co-hosted the Benthic Ecology Meeting in Charleston in April 2025 with **Craig Plante** and colleagues at Clemson University.

MBGSA ANNUAL REPORT

The Marine Biology Graduate Student Association (MBGSA) had a productive and joyful 2023-2024 academic year. We celebrated student success, supported each other's research, and continued weaving the web of connection that binds Fort Johnson partners in the common pursuit of quality scientific research.

Both semesters were fast and furious. In the fall, we welcomed a new class and a new boat which was named the "RV Coriolis." Several social events followed including a semester kick-off party and our second annual Oktoberfest gathering. The MBGSA also supported the first Fort Johnson NIST 5k fun walk/run, selling student designed fish-printed tote bags. In October, we faced a doubleheader: the Student Research Colloquium abutted a weekend-long-party to celebrate 50 years of the Graduate Program in Marine Biology (GPMB). In December we supported Lowcountry Orphan Relief by our participation in the Folly Beach Christmas Parade. Our float, which featured Octoclaus, the stuffed sepioid Santa, won 3rd Place for Folly's Funkiest Float. The MBGSA also participated in the South Carolina Sea Grant Beach Sweep Cleanup and multiple Adopt-a-Highway litter pickup days on Fort Johnson Road. Grad students also worked with Pete Meir to continue to bring CORAL's educational outreach to local community fairs and the schoolchildren of Charleston.

After the Fort Johnson Seminar Series moved to a time slot that conflicted with laboratory schedules, we developed a new lecture series for Friday afternoons. With his approval, we created the "William Anderson Jr. Lecture Series," (informally known as "WALS talks,") held bimonthly on Friday afternoons in the DNR Auditorium with a social gathering to follow at the DNR Outdoor Classroom. The research lecture series featured current students, recent graduates, and early-career scientists' research.

With the help of a motivated MBGSA Executive Board, and the leadership of Social Chair, Hayden Bessette, we hosted numerous community gatherings. Notably, we hosted a potluck dinner with the Masters of Science in Environmental and Sustainability Studies program (EVSS), an annual Halloween party and costume contest, and the GPMB Olympics with guest referee, Craig Plante. Members of the MBGSA also went to two Stingray hockey games, enjoyed an afternoon on Charleston's "Beer Trolley", and hosted several community social events for the larger Fort Johnson campus. Despite mediocre Fort Johnson partner interest in attending MBGSA events, we continue to celebrate the bookends of each term with a community potluck and urge GPMB faculty to come and network with current graduate students. Notably, our summer kickoff party was co-hosted with the Fort Johnson Diversity and Inclusion in STEM Forum to highlight family recipes from across the local community.

Although the 2023-2024 academic year saw an increase in tensions as The College of Charleston pushed to eliminate out-of-state graduate student tuition abatements, increasing the cost of graduate student tuition – the faculty of the GPMB spoke out in support of students – and for that I am deeply grateful. I and several grad students sent a letter to The College's Board of Trustees, which included data from a student financial status survey I conducted. We additionally met repeatedly with the Graduate School in an effort to express the financial strain felt by members of the

(Continued on page 7)

(Continued from page 6)

GPMB, with mixed receptions. This conversation will remain ongoing, and although it appears abatements will be available for now, I implore future MBGSA Executive Boards to build relationships with College Administrators and remain involved in this critical conversation.

It has been my sincere privilege to be the MBGSA President for the 2023-2024 academic year and to serve the larger GPMB community through my time in the program. Thank you for your continued support of the MBGSA and I hope to see you at one of our future events!

Jess Kusher '23-'24 MBGSA President

RECENT GPMB DEGREES

Elizabeth Bullard - Drivers of estuarine finfish assemblage structure: A case study of South Carolina estuaries (Advisor: Joseph Ballenger)

Leah DiMaggio - Oh Snap! Documenting age, growth, and reproductive biology for a data deficient fisheries species, Lane Snapper *Lutjanis synagris*, in the U.S. Caribbean (Advisor: Virginia Sherette)

Raven Ferguson - Examining the impact of marine diesel fuel on short- and tall-form *S. alterniflora*: Implications for marsh restoration after an oil spill (Advisor: Paul Pennington)

Maria Granquist - Assessing primer sets and temporal microbiome dynamics in mesophotic corals for enhanced husbandry and restoration (Advisor: Thomas Greig)

Clayr Kroenke - Metagenomic sequencing and targeted bacterial investigations: A DNA examination of waterways and Bottlenose Dolphin (*Tursiops spp*) strandings pertinent to the Charleston estuarine system (Advisor: Thomas Greig)

Kerryanne Litzenberg - The physiological effects of age and temperature on blood chemistry, metabolism, and mortality of harvested Horseshoe Crabs, *Limulus polyphemus* (Advisor: Jody Beers)

Kelsey Martin - Per- and polyfluoroalkyl substances (PFAS) in aquaculture feeds and potential dietary exposure to and from aquaculture fish (Advisor: Ashley Boggs-Russell)

Alexandra Mitchell - Understanding reproductive development in female white shrimp *Panaeus setiferus* in support of sustainable fisheries management (Advisor: Michael Kendrick)

Colin Perkins-Taylor - Examining the feasibility of using unmanned aerial systems (UAS) to collect non-invasive health data from free-ranging Tamanend's Bottlenose Dolphins (*Tursiops erebennus*) in the Charleston estuarine system (Advisor: Andrew Tweel)

Rachel Prostko - Effects of a Blue Crab (*Callinectes sapidus*) predator on the activity, foraging, and social interactions of Snapping Shrimp (*Alpheus angulosus*) (Advisor: Melissa Hughes)

Anna Quintrell - Microbiome analysis of three migratory shark species in the U.S. southeast (Advisor: Heather Fullerton)

Ian Rolfe - Ecophysiological adaptations of mesophotic macroalgae in the main Hawaiian Islands (Advisor: Heather Spalding)

Courtney Saldaña - Effects of predicted future ocean acidification and dredging-induced turbidity on the scleractinian coral lipidome (Advisor: Tracey Schock)

Anna Thornton - Assessing the multi-stressor interaction of Perfluorooctane sulfonate (PFOS) toxicity and temperature in two estuarine fish species, *Sciaenops ocellatus* and *Cyprinodon variegatus* (Advisor: Marie DeLorenzo)

Annabelle Tierney - Distribution and characterization of microplastics in sediments and shrimp species in South Carolina estuaries, USA (Advisor: Norman Levine)

Gabi Tutelo - Diet composition of juvenile snapper-grouper along the southeast U.S. Atlantic coast (Advisor: Tracey Smart)

Catlyn Wells - Exploring the spatial reproductive variability of reef fish in the southeast U.S. (Advisor: Walter Bubbley)

Adam Ziegler - Multiple cryptic lineages and restricted gene flow in the decorator worm *Diopatra cuprea* (Advisor: Erik Sotka)

2023 GPMB Student Cohort

Mikayla Baird
Oregon State University

Camille Berardone
Florida Atlantic University

Ashley Bobnar
Florida Atlantic University

Abigail Davis
University of South Carolina

Peter Gibson
Dickinson College

Zoe Golden
University of Tampa

Izzy Gustafson
University of South Carolina

Alec Heilman
Denison University

Julia Lynch
University of New England

Adeline McCullough
College of the Holy Cross

Cole Miller
College of William & Mary

Claire Murdock
Georgia Southern University

Grace Richa
Coastal Carolina University

Mary Sterling
U. of Southern Mississippi

Sabrina Wilner
University of South Florida

Schuyler Wilson
California Polytechnic State University

Piper Zola
Indiana University
Bloomington

*Well done and
congratulations to all!*

2023 MARINE RESEARCH STUDENT COLLOQUIUM

The 26th annual Student Research Colloquium was held on October 19th and 20th, 2023 and this year's featured keynote speaker was Dr. Jacqueline Padilla-Gamiño, Associate Professor in the School of Aquatic Fisheries and Science at the University of Washington. Dr. Padilla-Gamiño studies algae and marine invertebrates' ecophysiology and reproductive biology in a changing environment. By combining field and laboratory techniques, she examines the effects of climate change and marine pollution on coastal ecosystems. Her presentation was titled: "Why sex is important for ocean solutions in a changing climate." 7 students gave oral presentations of their research and **Ray Radick** and **Kerryanne Litzenberg** were awarded 1st and 2nd place for Best Oral Presentations. 14 students presented posters of their research and **Mikayla Sonnenfeld** and **Hannah Korper** were awarded 1st and 2nd place for Best Poster Presentations. The ABCs Communication Award went to **Jess Kusher** for her submission titled "Can we tell if Charleston's water is sick from outer space?" The colloquium concluded with a Lowcountry boil in the DNR outdoor classroom.



DIRECTOR'S LOG

Ch-Ch-Ch-Ch-Changes

Pretty soon now you're gonna get older...

The older GML building (the Annex) was built in 1935 and will undergo a major facelift starting in May 2025. The \$5.6M renovation project will provide sorely needed upgrades to the Annex's electrical, plumbing, HVAC and exterior that have been neglected for decades. Bathrooms will be renovated and enlarged to become ADA compliant. The teaching lab in room 113 (Annex) will be reconfigured and remodeled to provide improved functional teaching and research space for students. Also, a new deck will be built in the breezeway between the Annex and the main building that will provide additional outdoor space for picnic tables and GML community gatherings.



The National Park Service, as a part of the American Battlefield Protection Program, has awarded \$357K to the College of Charleston to restore a few historic structures at Fort Johnson. The proposal was originally submitted by the late Doug Bostick to restore and stabilize the two cisterns and the powder magazine, which was constructed in the late 1700s.



Doug was a war historian and director of the nonprofit South Carolina Battleground Preservation Trust. The restoration of these structures at Fort Johnson will be coordinated as part of the Fort Johnson Master Plan to enhance the education and recreational opportunities around Charleston Harbor.

Other recent changes at GML included the installation of new flooring and trim for the main building's hallways computer lab and conference room as well as select offices and classrooms this past summer. Asbestos abatement was performed where necessary. The changes were precipitated when a bathroom pipe burst on the 2nd floor of the main building, causing extensive water damage. Additional improvements to the 1st and 2nd floor bathrooms will be made soon.



Finally, a NOAA NCCOS/CRP grant, sponsored by Senator Lindsey Graham totaling \$1.325M, has been tentatively approved and will start at GML in late 2024 or early 2025. The 5-year grant is entitled "South Carolina Marine Resources Center: Grice Marine Laboratory Coastal Ecosystem Research and Education." Funds will provide approximately \$700K for equipment, \$200K for graduate student assistantships, \$60K for undergraduate summer internships and approximately \$100K for various outreach activities. The research will focus primarily on microbial ecology and biogeochemical studies within the Charleston Harbor Ecosystem.

Stay tuned for updates regarding all of these exciting changes!

Ch-ch-changes...Time may change me...But I can't trace time... (David Bowie)

Jack DiTullio - GML Director, August 2024