

GML LOGBOOK

A Newsletter of the Grice Marine Laboratory
and the Graduate Program in Marine Biology

SOAKING UP THE LOWCOUNTRY

As a marine ecologist, Chris Freeman is broadly interested in questions at the organismal and community level and has conducted research in estuaries, temperate hard-bottom reefs off the coast of Georgia, and, most recently, coral reefs. He is currently a Visiting Assistant Professor in the Biology Department, with lab space at the Hollings Marine Lab. Chris moved to Charleston in 2017 after finishing his post-doc at the Smithsonian Marine Station in Fort Pierce, Florida. He received his undergraduate degree in Biology from Connecticut College and a PhD in Biology from the University of Alabama at Birmingham. During his PhD, he used manipulative experiments and stable isotopes to study the nutritional interactions between microbial symbionts and marine sponges in the Caribbean. He expanded on this research during his post-doc by investigating how sponge microbiomes contribute to the incredible sponge biodiversity on Caribbean coral reefs. This research was part of the Marine Global Earth Observatory (MarineGEO) project at the Smithsonian and allowed him to travel to diverse locations across the Caribbean, Polynesia, and Southeast Asia. He is continuing his research at CofC with an NSF grant investigating how these symbioses drive variation in host sponge resource use on reefs off the Caribbean coast of Panama. Although most of his research is sponge focused and tropical, he is also excited to go back to his roots and conduct some community ecology in estuaries in Charleston. In addition, he is starting to search for freshwater sponges around South Carolina and hopes to develop a research program to review their taxonomy and ecology. Chris teaches introductory courses and General Ecology to CofC undergraduates and enjoys taking students outdoors to experience nature and conduct research. He also recently developed an interdisciplinary class with Bryan Ganaway in the Honors College that reviews the ecological and cultural impacts of war and conflict. He lives on James Island with his wife and son and spends his free time at the beach, hiking, or exploring local restaurants.



SCIENCE AT THE CORE OF GML

The Molecular Core Facility (MCF) at GML has been operating for over 17 years to support the research of students, faculty, and staff at the College of Charleston and researchers from other local institutions. When the facility opened in March 2003, its purpose was to serve as a DNA sequencing facility, but has since evolved to serve as both a service and training facility. The MCF houses a variety of molecular equipment that is available to all CofC researchers and is staffed by lab manager Kristina (Kristy) Hill-Spanik. Kristy trains researchers how to use the equipment and also serves as a resource, assisting with project design, sample preparation for sequencing (Sanger and high throughput), designing primers for PCR and DNA sequencing, and data analysis.

Kristy came to GML to manage the MCF in October 2013. She received her undergraduate degree in environmental science and policy (with a second major in music) at Duke University and her master's in marine science at the College of William and Mary. Her previous research at the Virginia Institute of Marine Science and the Smithsonian Institute focused on

shellfish pathogens, developing and using molecular tools for disease diagnostics, phylogenetics, and population genetics. Her role as MCF lab manager has allowed her to apply her knowledge learned in the field of parasitology to a variety of different projects.

Collaboration with Dr. Craig Plante and several of his undergraduates has led to important work examining the biogeography of benthic microalgae communities found in SC mudflats and beaches. Recently, she's been working with students from Dr. Heather Fullerton's lab as they prepare samples for sequencing of bacterial communities and assisting Dr. Allan Strand with a project examining the bacterial and fungal communities associated with pine tree roots. Kristy has also stayed connected to her parasite roots, working with Dr. Isaure de Buron and her students on a variety of fish parasite identifications as well as doing some parasite hunting in the oyster, *Crassostrea gigas* with Dr. Erik Sotka and one of his current undergraduate students. She is also planning work with Dr. Bob Podolsky and an undergrad student, looking at rhizocephalan parasites of decapod crustaceans.

For more info, see <http://gricemarinelab.cofc.edu/resources/molecular-core-facility/> or visit Kristy in GML 210!



GML Staff

Bob Podolsky
GML Director & Associate
Professor of Biology

Craig Plante
GPMB Director &
Professor of Biology

Greg Townsley
Laboratory Manager

Peter Meier
Marine Operations
Manager

Kristy Hill-Spanik
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GRADUATE RESEARCH COLLOQUIUM



Sheila Patek, PhD
Duke University

The 23rd annual Marine Biology Student Research Colloquium was held on October 26, 2019. The colloquium featured keynote speaker Dr. Sheila N. Patek, associate professor at Duke University. Dr. Patek primarily studies evolution, ecology, and physics through research on fast movement and acoustic signaling with mantis shrimp. Her keynote address was: "Adventures in Interdisciplinary and Accessible Research: The Impacts of Mantis Shrimp Strikes." Ten marine biology graduate students gave oral presentations and fourteen marine biology graduate students, and one environmental and sustainable studies graduate student presented posters of their thesis research. Sarah Zuidema won the best oral presentation award and Kyra Reisenfeld won the best poster presentation award. The colloquium concluded with a cookout and lowcountry boil for students, faculty and attendees at the Marshlands House outdoor classroom.

FORT JOHNSON REU PROGRAM

Our NSF-supported Research Experiences for Undergraduates summer program hosted a particularly engaged cohort in summer 2019. As always, interns worked in diverse CofC and partner labs at Fort Johnson and at the downtown campus, with projects that included microbial sulfur metabolism; algal symbiotic and harmful bacteria; the ecotoxicology of PCBs, phthalates, and TBT; lipidomics and proteomics of disease; and coral, fish, and microbial ecology.

The biggest changes to the program came in our Science Communication workshop series, where students heard from diverse experts and pursued new science communication products. They had workshops with Dr. David Shiffman (@WhySharksMatter) about the use of social media, with Dr. Art Woods (@BigBiology) about podcasting, with Joey van Arnhem (CofC Libraries) about video creation, and with Dr. Gabby Principe (CofC Psychology) about the psychology of public mistrust in science. The interns focused on two products: blog posts and SciComm videos documenting the scientific problem and approach of their projects. They also had a once in a lifetime experience with the team from the Conservation Connection podcast who spent four days documenting REU science through recording a set of podcast interviews and participating in a CORAL outreach event with the interns. (The podcast episodes are linked on our [Public Engagement page](#).) Special thanks to all of the workshop leaders, research mentors and program staff who helped to make the 2019 program one of our best ever! Sadly, the program was suspended for summer 2020 because of travel restrictions related to the coronavirus pandemic, but will be back for summer 2021. To learn more about our program, visit our website <http://reu.cofc.edu>.



REU Interns outside the SC Aquarium

CORAL PROGRAM

Our CORAL program (*Community Outreach Research And Learning*) continues to flourish with the help of grad and undergrad student volunteers. This year we reached over 2770 students during more than 23 outreach events. Along with these touch tank events, for the 4th year we hosted an interchange between James Island High students and visiting peers from Swedish high schools for a Bio Disc Workshop. This program (<https://www.scbiodiscovery.com/>) engages students from around the world in collecting data on the bio-fouling of standardized 10-cm acrylic discs that are kept suspended in local harbor waters. Thanks to all the volunteers who have helped make our outreach program so successful!

NEW GML TRUCK WITH A HISTORY

GML regulars watched our Ford F-150 deteriorate over many years, to the point where rust was barely holding the undercarriage and bed together and it became unsafe to drive. Thanks to educational resource funds through the Biology Department, we recently acquired an F-250 to replace it. The acquisition of a truck may not seem like a story worth reporting, but it came with a noteworthy history. The story starts with Pete Meier, our Marine Operations Manager, tracking down a source of good deals on used trucks through a federal surplus program. We identified in Columbia a 2012 truck with low mileage that the mechanic reported to be in excellent condition with no rust. Throughout the process, however, he neglected to mention custom features that Pete discovered only upon being dropped off in Columbia to pick it up: in place of the rear seat, a holding pen with its own air conditioning; under the cap, a specialized box on tracks outfitted for holding some kind of specialized equipment; on top, a set of blinking law enforcement lights; and on the side, the faint remnants of a stenciled sign: "Explosives Detection K-9 Unit." We are now in the process of outfitting the truck for its new life as a resource for marine science!



MARINE BIOLOGY GRAD STUDENT ASSOCIATION

The MBGSA has had an active year engaged in educational outreach, community service, fundraising, and social events. Last summer, the Tides Hotel on Folly Beach was again generous in allowing us to fundraise, with touch tanks and concession sales, at their outdoor Movie Nights. Families were delighted to hold starfish and play with crabs!

In the late fall we hosted a fundraising event at Palmetto Brewery with a raffle for locally donated prizes and original artwork. Through these and other events the MBGSA was able to provide travel funding for 11 graduate students (our support for conference attendance in the spring came to a screeching halt by the COVID-19 pandemic). Fundraising also supported MBGSA educational outreach, community service events, and Fort Johnson networking events, including our fall semester kick-off party in honor of new graduate students, a back to school gathering at the Barrel, and our weekly Fort Johnson seminar TGIF gathering.

This year our students did two road clean-ups along our adopted portion of Fort Johnson Road and participated in Beach Sweep/River Sweep with SCDNR and SC Sea Grant Consortium. At GML we also weeded and beautified the Green Teaching Garden at our fall Garden Day. We also resurrected Octo-Claus for the Folly Christmas Parade! Unfortunately, most spring volunteer events were cancelled because of the pandemic.

This spring has brought a flurry of eight thesis defenses, all held online due to the pandemic. The MBGSA is proud of our graduating members, but also regrets not being able to hold thesis defense parties, or our end of semester party. We hope to hold a gathering once these restrictions are lifted and life gets back to normal!

UNDERGRADUATE RESEARCH SPOTLIGHT

Brianna (Bri) Ingram completed her undergraduate degree in Marine Biology this spring and will attend the University of North Carolina—Chapel Hill in the fall to pursue a Master's Degree in geological sciences. She credits her independent research experience and mentors at CofC and GML for her growth as a student and finding her niche within the field of marine biology.

Q: Can you briefly summarize your undergraduate research project?

A: During summer 2019, I collected and processed two species of mud minnows from the Charleston Harbor to find the amount of microplastics they ingested, and my results indicated that species in a marsh environment had higher incidence of ingestion than those in sandy habitats. I went a step further in fall 2019 to investigate the amount of microplastics in the sediment of the same sites. The results complimented my previous research with higher incidence of microplastics found in the marsh sediment.

Q: What sparked your interest in working on this project?

A: I have always had an interest in pollution and toxicology so this interdisciplinary project, which also prompted the addition of a geology minor, brought together marine biology and geology to address pollution in our environment.

Q: What are your future goals in science?

A: I will be working in the University of North Carolina – Chapel Hill's Coastal Environmental Change Lab conducting research focused on barrier island systems and dune growth as I pursue a master's degree in geological sciences. Following that, I would like to work in environmental consulting or pursue a doctorate degree.

Q: What marine organism do you identify with?

A: I identify the most with cephalopods, especially the octopus. I have been lucky to see quite a few during dives in the British Virgin Islands and their intelligence has always made me feel as if they can understand me.



FACULTY NOTES

DiTullio Lab: The DiTullio lab members currently include Dr. Peter Lee, lab manager and former GPMB graduate student, Nicole Schanke, and Molly Albers (CofC undergrad). International collaborations are ongoing with several different research groups from the University of Napoli, Italia including Ph.D. candidate Francesco Bolinesi. A proposal is currently pending for future research activities at Svalbard. During the 2019-20 academic year the lab primarily focused on Y2 of our two NSF-funded projects involving climate change processes on microbial populations in polar ecosystems. Specifically, lab data analyses continued while manuscripts were prepared. Three peer-reviewed manuscripts were published during the academic year including one in *Nature Communications* that revealed recent hydrographic changes in the Ross Sea, Antarctica. A former CofC undergrad (Lauren Lees) who participated on our Antarctic expedition, authored one of those publications in collaboration with the Janech laboratory. Two other publications are currently in-press at *PNAS* and *Nature Microbiology*. Two additional publications are currently under review including one from our 2018 Arctic expedition. Preliminary results from our 2017-18 expedition to the Amundsen Sea, Antarctica were recently presented at the 2020 Ocean Sciences Winter Meeting in February at the San Diego Convention Center, CA.



Students carrying out an experiment in Bocas del Toro, Panama

Freeman Lab: We started field research related to an NSF-funded project investigating how microbial symbionts influence resource use in Caribbean sponges. This included a six-week trip to the Smithsonian Tropical Research Institute in Bocas del Toro, Panama with CofC undergraduate students Bailey Fallon, Abby Stephens, and Samantha Czwalina. While in Panama, we built a common garden reef that we will revisit for experiments next summer and used isotopically-enriched compounds to assess the nutritional contribution of photosynthetic symbionts like cyanobacteria to common Caribbean sponges.

In addition to helping with this project, CofC students conducted independent research on microplastics in sponges (Fallon), sponge larval ecology (Stephens), and sponge-mediated nutrient cycling (Czwalina). Alex Parry (GPMB) joined the lab in the fall and will be studying detritivore communities on coral reefs in Panama. Marine Biology students Mylene Gonzales and Kylee Flynn also started research projects on infaunal sponge ecology and sponge heterotrophic feeding, respectively. We recently published a paper in *ISME J* highlighting the importance of microbial symbionts to sponge biodiversity in the Caribbean.

Harold Lab: Ana Silverio joined the lab as an NSF REU intern last summer (2019), contributing in many ways to our project on patterns of abundance and diversity of larval and other early life

history stages of fishes in estuarine habitats dominated by the invasive alga *Gracilaria vermiculophylla*. Carly Lynn Strange, who had completed her Bachelor's Essay on an aspect of that project last spring, gave a talk on the work at the annual meeting of the American Society of Ichthyologists and Herpetologists in Utah, July 2019. Graduate student Mary Ann Taylor (GPMB) continues her mainly histological research on life history of the Naked Goby, *Gobiosoma bosc*. We thank the Marine Resources Research Institute (SCDNR), Fort Johnson, for resources in aid of Mary Ann's work. Finnian Cashel just completed his Bachelor's Essay (Spring 2020) on the relationship between tidal cycle and the abundance of *Fundulus heteroclitus* and other fishes in intertidal habitats. Other recent work from the lab has resulted in co-authorship (Harold) of the Red List of Marine Bony Fishes of the Eastern Central Atlantic, plus online publication of over a hundred Red List assessments of deep-sea stomiiform fishes of the Gulf of Mexico. Finally, many thanks to Danielle Beers (GPMB) and Bailey Benson (CofC Biology undergraduate) who worked during the academic year as assistants in the Fish and Invertebrate Collection.



Tony Harold with Ichthyology students in the Fish and Invertebrate Collection

Hughes Lab: Although we barely moved into GML before the shutdown, we've been keeping busy! We had 3 undergraduate students working (briefly) in the lab, preparing to study social interactions in snapping shrimp; hopefully we'll be able to resume at least some of this work in the fall. MES student Jonathan Cauthen successfully completed his internship, in which he performed an extensive survey of ecotourism canoe and kayak companies along the SC coast to estimate the extent of both ecological and economic impact such activities have in each region. As rentals (as opposed to guided tours) represent a large proportion of this kind of ecotourism along our coast, he also developed a template for a guidebook for self-guided ecotours, in consultation with several stakeholders, including those in the ecotour business. Meanwhile, MES student Nolan Schillerstrom continued his work on creative approaches to minimizing human disturbance of shorebirds, in particular the Red Knot. You can follow his work (and the trials and tribulations of Mamma Red Knot) here: <https://www.redknotready.com/>. Former GPMB student Whitney Heuring continues to publish work from her thesis; her study of pair-mate choice in male and female snapping shrimp was recently published in *Animal Behaviour*, and we're currently working on a seasonal analysis of variation in monogamy and size-assortative pairing. (Preview: social monogamy often arises under sexual conflict; in snapping shrimp, it appears that the "winner" of this conflict may shift seasonally.)

FACULTY NOTES

Plante Lab: Research and writing once again focused on the ecology and biogeography of benthic microorganisms. Our work with former CofC undergraduate, Aubrey Butcher, on the microalgal recovery after beach renourishment was published (Hill-Spanik et al. 2019). Likewise, former graduate student, Whitney Hook, published a portion of her thesis research that examined the production of antibiotics by bacteria in marine sediment porewaters (Hook & Plante 2019). The work of another former graduate student, Vanessa Bezy, was also submitted for publication (in revision). This work analyzed the nest microbiology of olive ridley sea turtles, which lay eggs in mass nesting events (arribadas) and generally exhibit high embryo mortality. It employed DNA sequencing to compare fungal and bacterial communities in high- and low-hatching success nests to test whether high metabolic activity due to abundant broken eggs or specific pathogens caused nest failure. A South Carolina Sea Grant-funded study of the biogeography of benthic diatoms in South Carolina salt marshes was finalized and submitted for publication to *Estuaries and Coasts*. This project started with intense field sampling conducted in summer 2018 with REU summer intern, Connor Graham, CofC undergraduate student Max Cook, and Kristy Hill-Spanik. CofC honors student and Aiken Fellow, Geoffrey Gill, successfully completed his bachelor's essay on the biogeography of Sargasso Sea bacterioplankton and is working to prepare the manuscript for publication. Finally, first-year GPMB student, Josiah Waters, joined the lab and will be studying drivers of microalgal community structure in saltmarshes over various temporal scales for his Master's thesis project.

Podolsky Lab: In collaboration with Dr. Dara Wilber we have been continuing to develop work on a model system, the invasive intertidal porcelain crab *Petrolisthes armatus*, which has been expanding its range poleward as coastal ocean temperatures warm. In particular, we are carrying out a series of graduate and undergraduate projects that focus on the sensitivity of different life history stages to cold temperature to better understand which parts of the life cycle are most limiting further expansion. Juliana Ventresca, a graduate student in marine biology, has been developing research to look at the effects of temperature on ovigery and larval development, using regular collections to follow ovigery in the field and incubator experiments to look at temperature thresholds for ovigery in the lab. Hails Tanaka has been working as an undergrad research assistant with Juliana, but will be starting his own project



REU Intern Sam Daughenbaugh

looking at the rhizocephalan *Loxothylacus texanus*, a parasite of brachyuran mud crabs that we often collect with the invasive anomuran *Petrolisthes*. Hails will be attempting to experimentally infect mud crabs to measure effects on their physiology. Undergrad Megan Treahy worked on the temperature sensitivity of *Petrolisthes* larvae, using a ther-

mal gradient block to detect the range where larvae could maintain swimming. Sam Daughenbaugh, an undergrad visiting from DePauw University visiting the lab as part of the REU program last summer, continued our work on sea urchin larval toxicology, focusing on the effects of 3 phthalates, compounds used to make plastics more pliable and durable. A GPMB graduate student, Jonathan Stewart, is currently planning studies of the effects of anti-depressants on the behavior and physiology of oyster larvae, with an eye toward understanding how dispersal and population connectivity are affected by point-source releases of anti-depressants from sewage treatment plants. All research is currently on hold in response to the SARS-CoV-2 pandemic.

Sancho Lab: Brittney Parker (MES) successfully defended her master's thesis on the ingestion of microplastics by fishes in Charleston Harbor. This was the result of a fruitful collaboration with Barbara Beckingham (CofC, Department of Geology), Joey Ballenger (SCDNR) and John Weinstein (The Citadel). Brittney found that multiple fishes are ingesting tire wear particles and identified Atlantic Menhaden as a species that ingests extremely high numbers of plastic fibers. Before finishing her thesis, Brittney received a NOAA Knauss Fellowship and is presently in Washington DC working for FEMA. Bri Ingram (Marine Biology undergraduate), helped Brittney stink up the hallways by digesting all kinds of fishes, and pursued her own microplastic research project comparing two different mummichog species collected behind Grice. She continued her research by analyzing microplastics in different marsh sediments with Barbara Beckingham, finding a direct correlation between specific fish microplastic ingestion rates and small-scale environmental concentrations. She will graduate in May and was accepted into graduate school at University of North Carolina Chapel Hill where she will work on coastal dune ecology. James Strange (Marine Biology undergraduate) continued the bonnethead shark dietary analysis that was started by Creed Branham (Marine Biology undergraduate), plowing through many stomachs from sharks collected by SCDNR in South Carolina and also contributing to stinking up the hallways at Grice. Bonnethead sharks seem to be omnivorous sharks consuming seagrasses in the Gulf of Mexico, but not in South Carolina waters, where they feed mostly on crabs and shrimp. Strange and Branham intend to work as fisheries technicians for a year after graduating in May, and hope to apply to graduate school afterwards. Mathew Young (GPMB) started his research in collaboration with Bryan Frazier (SCDNR) trying to differentiate the ecologies of the two cryptic species of hammerhead sharks



James Strange and Creed Branham by Mike Ledford

James Strange and Creed Branham were featured in The College Today blog, today.cofc.edu

mal gradient block to detect the range where larvae could maintain swimming. Sam Daughenbaugh, an undergrad visiting from DePauw University visiting the lab as part of the REU program last summer, continued our work on sea urchin larval toxicology, focusing on the effects of 3 phthalates, compounds used to make plastics more pliable and durable. A GPMB graduate student, Jonathan Stewart, is currently planning studies of the effects of anti-depressants on the behavior and physiology of oyster larvae, with an eye toward understanding how dispersal and population connectivity are affected by point-source releases of anti-depressants from sewage treatment plants. All research is currently on hold in response to the SARS-CoV-2 pandemic.

(Continued on page 6)

FACULTY NOTES

(Continued from page 5)

found in South Carolina, analyzing elemental composition of vertebrae at the Hollings Marine Laboratory. Gorka Sancho was back teaching Biology of Fishes and Oceanography classes, travelled to the Ocean Sciences meeting in San Diego to present work on fish ingestion of microplastics in Charleston Harbor, and in collaboration with Erik Sotka helped design and move through the faculty Senate a new undergraduate Marine Biology curriculum.

Sotka Lab: In 2019, the Sotka and Strand labs were awarded an NSF grant (NSF-BioOce "The genetic legacy of an Asian oyster introduction and its disease-causing parasite"), focusing on the historical genetics of the Pacific oyster *Crassostrea gigas* and the MSX-causing parasite *Haplosporidium nelsoni*. Sotka went to Boston MA to help with a project on local adaptation in *Zostera* seagrass beds in collaboration with Northeastern University and Keene State College. An undergraduate, Daniela Adjunta performed a 20-week survey of

the phenology of *Spartina alterniflora*, showing that tall-form tends to flower and set seed earlier than short-form plants in a single marsh. We also continued our collaboration with SC SeaGrant's Seed-to-Shoreline program, and supported two middle-school teachers in comparing seed and seedling traits between tall- and short-form *Spartina*.



Comparing *Spartina* forms

RECENT GPMB DEGREES

Francesca Battaglia – Microplastics from the Gut of a Marine Apex Predator, the Bottlenose Dolphin (*Tursiops truncatus*): Challenges of Measurement and First Results from South Carolina, USA (Advisor: Barbara Beckingham)

Amanda Bayless – Examining Water Quality Parameters as Potential Threats to Reef Organisms at Two National Parks in St. Croix, USVI (Advisor: Cheryl Woodley)

Danielle Beers – Comparing the Survival and Growth Implications of Photoenhanced Thin Oil Sheens on Newly Hatched and One Week Old Sheepshead Minnows (*Cyprinodon variegatus*), Spotted Seatrout (*Cynoscion nebulosus*), and Red Drum (*Sciaenops ocellatus*) (Advisor: Marie DeLorenzo)

Nicole Enright – The Genetic Consequences of Matrix Models in Comparative Demography and Conservation Biology (Advisor: Allan Strand)

Emily Fuqua – Effect of Summer Temperatures on Aerobic and Anaerobic Metabolism in Cultured Juvenile Red Drum, *Sciaenops ocellatus* (Advisor: Eric McElroy)

Alina Hall – A Multi-omic Approach to Identifying Potential Settlement Cues in Cetacean Epidermis for the Tassel Barnacle, *Xenobalanus globicipitis* (Advisor: John Zardus)

Katherine Hoffman – Turtle Tracking Trouble: The Influence of Carapace Morphology and Composition on Transmitter Adhesion to Loggerhead (*Caretta caretta*) Sea Turtle Keratin (Advisor: Mike Arndt)

David Jones – Addressing Life History Information Gaps in a Data-Deficient Caribbean Reef Fish, The Princess Parrotfish *Scarus taeniopterus* (Advisor: Virginia Shervette)

Jessica Karan – Determining Correlates of Gentoo Penguin Health Using Captive Populations (Advisor: Paul Nolan)

Alyssa Marian – Long-Term Passive Acoustics as a Novel Approach to Assess Spatial and Temporal Patterns of Atlantic Common Bottlenose Dolphins (*Tursiops truncatus*) in the May River Estuary, South Carolina (Advisor: Eric Montie)

Tessa Pfeifer – Microplastics in Stranded Bottlenose Dolphin (*Tursiops truncatus*) Harbor Porpoise (*Phocoena phocoena*) and Long-Beaked Common Dolphin (*Delphinus capensis*) in the United States (Advisor: Barbara Beckingham)

Christopher Pickens – Evaluating the Effectiveness of Marine Protected Areas for Reef Fish Species in the US South Atlantic (Advisor: Tracey Smart)

Teresa Popp – Population Characteristics and Reproductive Trends of the Green Porcelain Crab, *Petrolisthes armatus*, in its Introduced Range (Advisor: Dara Wilber)

Meghan Reilly – Life History of Complemental Males in the Commensal Barnacle *Chelonibia testudinaria* and the Influence of Substratum on Sex (Advisor: John Zardus)

Megan Sporre – Detection of Multiple Paternity in Diamondback Terrapin (*Malaclemys terrapin*) Egg Clutches from Charleston, SC Through the Use of Novel Molecular Techniques (Advisor: Allan Strand)

Graham Wagner – Age, Growth, and Reproductive Biology of a Data-Deficient Parrotfish species (*Sparisoma viride*) in the US Caribbean (Advisor: Virginia Shervette)

Nick Weber – Stress Response and Post-Release Mortality of Blacktip Sharks (*Carcharhinus limbatus*) Captured in Shore-Based and Charter Boat-Based Recreational Fisheries (Advisor: Gorka Sancho)

Sarah Zuidema – A Multi-Parasite Approach to Understanding Black Gill and White Shrimp *Penaeus setiferus* Health (Advisor: Michael Kendrick)

GRADUATE STUDENT AWARDS

Brooke Blosser was awarded the Barans Marine Biology Fellowship.

Danielle Beers, Student Ambassador at the 20th International Symposium on Pollutant Responses in Marine Organisms (PRIMO).

Jake Cashour and **Jonathan Stewart** were awarded Principal's Fellowships.

Delaney Drake won the Science, Mathematics, and Business category at the 14th Annual Graduate Research Poster Presentation, The 2020 Excellence in Collegiate Education and Leadership (ExCEL) Award for Outstanding Student of the Year in the Graduate School and The McLeod-Frampton Graduate Scholarship.

Sarah Kell was awarded Distinguished Dr. Stephan J. Klaine Platform Presentation, 2nd Place at the 28th Annual Carolinas Society of Environmental Toxicology and Chemistry (2019), Student Ambassador and Rachel Carson Award at the 20th International Symposium on Pollutant Responses in Marine Organisms (PRIMO), and was named as an Influencer in the Fall 2019 Coastal Conservation Newsletter.

Jenna Klingsick was awarded a Joanna Foundation Graduate Fellowship in Marine Biology

Julie Loewenstein was awarded a School of Sciences and Mathematics Research Stipend and a Joanna Foundation Graduate Fellowship in Marine Biology.

Emily Parsons was named Collaborator by The Coral Restoration Foundation™ for November of 2019.

Chris Pickens was selected for the John A. Knauss Marine Policy Fellowship.

Kyra Reisenfeld received Best Student Poster Award at the Diamondback Terrapin Working Group's 8th Symposium on the Ecology, Status, and Conservation of the Diamondback Terrapin, First Place Poster at the 2019 GPMB Student Research Colloquium and First Place at the 6th Annual Three Minute Thesis (3MT®) Research Competition.

Gus Snyder was awarded the W. Hugh Haynsworth Fellowship.

Caroline Tribble was awarded the Old Glebe Fellowship.

Taylor Williams received the Evolving Seas RCN Professional Development Exchange Award.

Sarah Zuidema was awarded First Place Oral Presentation at the 2019 GPMB Student Research Colloquium and Second Place at the 6th Annual Three Minute Thesis (3MT®) Research Competition.

Jeff Good, **Jess Karan**, and **David Klett** received Slocum-Lunz Foundation research grants.

Delaney Drake, **Robin Minch**, **Rachel Prostko**, and **Matthew Young** were awarded Presidential Summer Research Awards from the College of Charleston.

Delaney Drake, **Jeff Good**, and **Jenna Klingsick** were nominated and elected to the Sigma Xi Scientific Research Society.

Clayr Kroenke, **Gabrielle Kuba**, **Emily Parsons**, and **Ellen Reiber** received Marine Genomics Fellowships.

Alejandra Enriquez, **Jeff Good**, **Jess Karan**, **Sarah Kell**, **Juliana Ventresca**, **Sarah Zuidema** Graduate School Research and Presentation Grants.



New GPMB Students 2019-2020

Shannon Bley
Stockton University

Jacob Cashour
Southern Wesleyan University

Cassandra Evanchuk
Kutztown University of PA

Clayr Kroenke
Clemson University

Gabrielle Kuba
Salve Regina University

Robin Minch
McDaniel College

Alexander Parry
Millersville University of PA

Nicole Principe
University of Illinois Urbana

Rachel Prostko
University of Miami

Augustus Snyder
James Madison University

Jonathan Stewart
Clemson University

Michael Thienes
Montana State University

Conor Torris
University of South Carolina

Lindsey Transue
University of Tennessee

Caroline Tribble
Virginia Tech

Josiah Waters
Lenoir-Rhyne University

Taylor Williams
University of Hawaii at Manoa



ALUMNI NOTES

Todd Kellison '95: After completing my MS, which focused on fish utilization of artificial reefs, I worked for ~ a year with the SCDNR MARMAP program. In 1996 I moved to Raleigh, NC to pursue a PhD at NC State University focused on flounder ecology and stock assessment. I completed that degree in 2000, and remained at NC State as a postdoc / visiting professor until 2002, when I began working as a fishery biologist for the National Park Service, based at Biscayne National Park (near Miami). In 2005 I transitioned to NOAA Fisheries in Miami, working predominantly on a dive-based reef fish survey in the FL Keys, and then headed north to my current position (also with NOAA Fisheries) in Beaufort, NC, where my work involves research and monitoring of

federally managed reef fish species in southeastern US waters (and, in a great link to the past, considerable collaboration with the SCDNR MARMAP program).

Julian M. Burgos '00: After finishing my Master's degree at the College of Charleston, I moved to Seattle and got a PhD in Aquatic and Fishery Science from the University of Washington. There, I worked describing spatial patterns of walleye pollock using acoustics. Then I did a post-doc at NOAA's Alaska Fishery Science Center, working on recruitment variability in snow crab in the Bering Sea. Since 2009 I have been a researcher at the Marine and Freshwater Research Institute (MFRI) in Reykjavik,

(Continued on Page 8)

ALUMNI NOTES

(Continued from page 7)

Iceland. My main area of work is benthic habitat mapping and species/habitat distribution modelling. I am the co-leader of the Icelandic Marine Habitat Mapping programme, where we map benthic habitats in the Icelandic shelf, focusing on Vulnerable Marine Ecosystems (VMEs). I also work on coastal mapping of kelp, seaweeds, and maerl beds. My other area of work is in impacts and risk assessment of commercial fisheries on seabed habitats, and risk assessment of disease transmission from wild species to domestic ones. I participate on working groups on the International Council for the Exploration of the Seas (ICES) related to habitat mapping and risk assessment. On the personal level, I am married to Nancy. We have a son, Elias, who is twelve years old and a fluent Icelandic speaker. Our Icelandic, on the other hand, is still pretty bad.

Lyndsey Lefebvre '09: For 10 years after receiving my Masters at CofC, I was a contractor for the National Marine Fisheries Service (Southwest Fisheries Science Center, Santa Cruz, CA; and Northeast Fisheries Science Center, Woods Hole, MA) studying the life history of groundfish species with an emphasis on reproductive ecology and age and growth. In these positions, I was able to see the data I generated directly impact the management of species; participate on stock assessment panels; and serve as a member of the scientific crew on long-term biological and ecological research surveys in the

California Current, Bering Sea, and Gulf of Maine. In February of 2020, I joined the Fisheries Oceanography and Larval Fish Ecology Lab at the Woods Hole Oceanographic Institution as a research associate. As a member of the interdisciplinary science team working on the Ocean Twilight Zone project, I will be examining the reproductive ecology of mesopelagic fishes. When not spending time with the fishes, I enjoy exploring the forests and beaches of Cape Cod with my 17 month old daughter, husband, and 2 dogs.

Jennifer Fountain Baltzgar '10: After finishing my master's degree, I worked as a research analyst in the neurobiology department at Duke University before enrolling in the graduate program at North Carolina State University. I earned my PhD in Genetics with a minor in Genetic Engineering and Society. My graduate work examined population genetics in two insect pests of the poor, *Aedes aegypti*, the mosquito that transmits Zika and dengue viruses, and the maize weevil, a pest of stored grain. I am currently a Postdoc at North Carolina State University where I am continuing my research on the fine-scale population genetics of *Aedes aegypti*. Ultimately, my work will be incorporated into a mathematical model to predict how emerging genetic engineering technologies may help alleviate the harmful effects from arboviral diseases.

DIRECTOR'S LOG

This edition of GML Logbook comes to you in the midst of the coronavirus pandemic of 2020. Research activity at GML has ground mostly to a halt, and classes were taught remotely starting after spring break. Office hours, review sessions, thesis defenses, department meetings, committee meetings, and professional conferences have all been online. Our Fort Johnson faculty housed in the MRR1 and HML buildings have likewise been kept from their work. Some of us are steering kids toward greater self-sufficiency at home or attending to other family members' health issues.

This pause gives us a chance to reflect on both the challenges we face and the blessings of being at a place like GML. The interruption of research and the fiscal crisis that will follow will likely have far-reaching effects on planning for the future of GML. A set of architectural plans that we developed over several years and presented to President Hsu in March—to build an extension to GML, restore functionality lost with the boathouse in 2007, and create more research and teaching space—will now be sidelined, as have other recent efforts to restart progress on improving infrastructure at GML. We do not know how long use of the facility will be restricted nor how long the effects of this period will last into the future. Nevertheless, we will continue to seek the resources needed for our facilities to better match the quality of our faculty and programs.

In the midst of this crisis, it is hard to find causes for optimism, but I want to briefly mention two. The first is our GML staff. We have spent several years building a strong team and a culture of teamwork. I was relating to a colleague at a different institution,

who does not enjoy the benefits of strong support, how responsive and reliable our staff have been. They step up and they solve problems. Every day they demonstrate their investment in supporting students, faculty, and one another. It is a privilege to work with Greg, Pete, Katie, Norma, Kristy, and Barbara for all they continue to do to support the GML mission.

A second bright spot is our students. Where possible, grad students are continuing work at home with borrowed equipment. Those in their final year are presenting excellent defenses remotely, and plans are underway to accommodate the large number of oral qualifying exams that must be completed this summer. We all recently received the “first ever global pandemic edition” of the MBG-SA Monthly Snapshot, a 13-page collection of thesis defense reminders, quarantine pics, musings from our dedicated librarian Geoff Timms, photo enticement to go see local wildlife, a quarantine playlist, and a general call to keep believing in what we do—a very welcome boost to morale. And while online classes were a challenge for all, my students remained engaged and committed to lectures and labs, to completing assignments, and to taking exams, many of them with families undergoing financial hardships or health issues. Their resolve to continue the learning process was remarkable.

We are all anxious to return and resume, and the dedication of our staff and resilience of our students will surely be critical to coming back from this crisis.

-Bob Podolsky, May 2020