USCB
UNIVERSITY OF SOUTH CAROLINA BEAUFORT

USCB SCHOOL OF
SCIENCE & MATHEMATICS
NEWSLETTER

Vol. 3 • No. 1 — *The Official Newsletter of the USCB School of Science and Mathematics.* — SPRING 2020

What's New in STEM@USCB

The spring 2020 semester is underway. Many new firsts this fall and we're looking to expand our programs in the sciences and mathematics. We had excellent results in recruiting students in the fall of 2019, and we anticipate a new surge in enrollments at both the Bluffton and Beaufort campus locations. We had our first recruits to the new degree program for the B.S. in Information Science and Technology, and we had our first seven masters-level students start in the new M.S. in Computational Science program. Biology was the biggest major last fall; we expect a strong showing as we recruit for the fall of 2020. We have even more applicants for the Biology program at this point than we had in last year's pool of applicants. We are working hard to finalize approvals for a new program in Marine Biology, with exciting new capstone courses in Biological Oceanography and a course in Marine Policy to prepare students to work with or for governmental agencies. This is an exciting new addition to our focus in environmental studies. We hope the many students who have expressed an interest in our Marine Biology focus will come and be a part of the new program.

We have been developing more student stories lately, and we're reaching out to alumni to help promote the success of our graduates on our new university website in the coming months. The new web design is exciting, and it should make finding the desired USCB degree easier for high-school students interested in science and mathematics at USCB.

I'm happy to report that research grant activity was up in the past year. When compared on a per-capita basis, our USCB faculty is bringing in more research dollars than the other senior institutions: USC Aiken and USC Upstate. Just recently, USCB was recognized by the Fulbright committee as a national baccalaureate-level "Top Fulbright Producing Institution!"

USCB Computation Science Students Place in ACM ICPC Southeast Programming Contest

Veronica McLeod, Frank Cazales, Lintao Chen, and Dr. Kishwar Ahmed, team coach of Sand Sharks B.

On November 9, 2019, USCB sent two teams to participate in the 2019 ACM ICPC Southeast USA Programming Contest hosted by College of Charleston. The Association for Computing Machinery (ACM) has been organizing the international collegiate programming contest (ICPC) for more than 30 years. Each year, thousands of teams compete worldwide to earn the privilege of going to the world contest finals. One of 50 worldwide regions, our Southeast USA region is comprised of Mississippi, Alabama, Georgia, South Carolina and Florida. Teams of three programmers from different schools in the region can participate in each regional contest vying to solve complex problems. The best team advances to compete in the world finals.

For the first time, two teams from the Department of Computer Science at USCB participated in the ACM ICPC Southeast Programming Contest. The two teams, Sand Sharks A (Mr. Jarod Valvo, Mr. Mitchell Brock and Mr. Bradley Lamb) and Sand Sharks B (Mr. Lingtao Chen, Mr. Frank Cazales and Ms. Veronica McLeod), "hacked" their way through the grueling five-hour contest, coached by Dr. Kishwar Ahmed, our newest assistant professor in Computer Science at USCB. The Sand Shark B team was able to solve four of the contest's five problems to gain third place among 19 teams in their first time competing. Way to go, Sand Shark B team!

Fecal Coliform Levels Rising in May River

A recent analysis by Ms. Jamileh Soueidan, Master's Degree candidate in Environmental Studies, College of Charleston, and her advisor, Dr. Eric Montie, associate professor of Biology at USCB, demonstrated accelerated rising of coliform levels over the past two decades. The study used a long-term dataset from 11 shellfish-monitoring stations tested periodically by the South Carolina Department of Health and Environmental Control. A grant from Beaufort County and the Town of Bluffton funded the analysis. The major trend in the data was not surprising: salinity has been dropping and coliform levels have been rising due to increased runoff from the land into a largely high-saline

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USCB Pre-Professional Association Hosts Speaker Dr. Bobbi Tenwolde

Dr. Tenwolde with a patient (courtesy or Dr. Tenwolde)

On October 21, 2019, the Pre-Professional Association had the privilege of dining with Dr. Bobbi Tenwolde, a USCB alumna (B.S. Biology 2008), to discuss how to become a standout applicant for medical school. Dr. Tenwolde grew up on Hilton Head Island and started USCB as an English major, changing to Biology after a marine science course inspired her. After graduating, she became the first student to finish four years at USCB and gain acceptance to MUSC Medical School.

Students enjoyed hearing about Dr. Tenwolde's journey through medical school and appreciated the opportunity to ask her questions and get advice based on her experience. Getting advice from local doctors for pre-med students is helpful but speaking with an USCB alumna who "lived her dream" made the experience even more personal and real. Many students left the meeting feeling encouraged that they, too, could achieve their goals through hard work and determination. Ms. Olivia Whipple, president of the Pre-Professional Association, says that based on this, the Pre-Professional Association "would love to host another 'Dinner with a Doctor' in the future."

Fecal Coliform Levels Rising in May River

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system. The real surprise was the rate at which these levels were increasing seasonally, which no one predicted. The levels of bacteria are not directly harmful to humans, but they may cripple the local oyster business, much to the dismay of oyster lovers in the region. Kim Jones, the Bluffton watershed manager, cited the study's significance not merely due to its findings, but rather due to its uniquely large scale. "There's climate change that's changing rainfall and weather patterns," she says. "We know we have an increase in population. We know we have increased impervious surface. We know we're changing our stormwater design standards on a regional level. So, how do we begin to meld these data into policy recommendations that go… [toward the] …ultimate goal of restoring and protecting shellfish harvesting throughout the May River?"

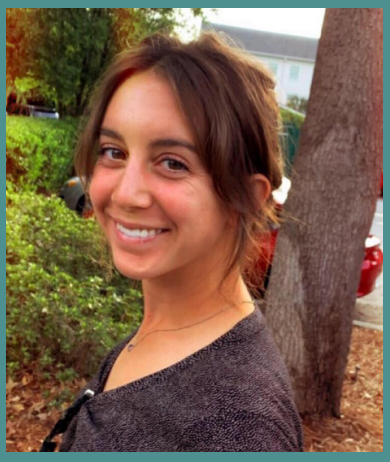
Photo credit: Dr. Eric Montie 2020

Alumni Highlights

Sarah Ludwig-Monty *(B.S. Biology 2011)*

Sarah Ludwig-Monty is a USCB Biology alumna from Hilton Head Island. Sarah was an outstanding student at USCB. While earning her degree, she participated in a University of Georgia international research project in partnership with the University of Georgia to mainland China that involved a semester of learning Mandarin Chinese at UGA and a summer in China identifying and isolating DNA from plant specimens. Additionally, her two-year undergraduate research project at USCB earned first place for hypothesis-driven research at the 2011 Student Research and Scholarship Day. Sarah then went on to earn a master's degree in Environmental Management from Duke University's Nicholas School of the Environment. Her research focused on Spatial and Temporal Analysis of Long-term Water Quality Data in the Pamlico River Estuary, N.C. Through that, Sarah landed a permanent position in January as lead coordinator and liaison for Southeastern U.S. states for the United States Environmental Protection Agency (EPA) in Washington, D.C. "Essentially, I will assist in writing research questions, funding proposals and managing progress in the research grants we award for all of the latest emerging contaminants, such as toxic harmful algal blooms, lead in drinking water, PFOA/PFOS, microplastics, and more," she says. "The final goal is to help influence policy decisions that are based on sound science." Great job, Sarah!

Bridgette Noonan *(B.S. Biology 2017)*



During Bridgette Noonan's time at USCB, she was a star women's soccer player who cited her many opportunities as a USCB student among her most valuable experiences. After graduation, Bridgette gained employment on a yacht where she got to travel to the Great Lakes, Lake Erie, Lake Ontario, Lake Huron, and then the largest freshwater island in the world, Manitoulin Island. She then worked at Atlas Surveying in Okatie, S.C., where she learned standards for several types of land surveying, wetland and OCRM delineations, and FEMA Flood Certificates. Now, she works as a Stormwater Coordinator and Field Assistant for the Town of Bluffton. Her job involves coordinating events, meetings and assistance to all Watershed Division Employees. The job arose from an internship with Dr. Kim Ritchie, funded by a grant from the Town of Bluffton, to develop new DNA-based testing protocols. The hope is for that research to yield a quicker field test that will replace the outsourced testing now performed on contract for the town, out-of-state.

Lea Brown *(B.S. Biology 2018)*

Lea Brown recently landed a job teaching in Korea after graduation. Originally from Batavia, N.Y., she graduated from Batavia High School with a Regents diploma. Lea heard about USCB while visiting her sister on Hilton Head Island and came here to major in Biology. After learning about teaching opportunities in Korea, she applied for a position through EPIK, a Korean governmental teaching site, and later secured a position in South Korea. Prior to that, Lea attained a "Teaching English as a Foreign Language" certification. She had an interview at 1:30 a.m. via webcam, and the EPIK program notified her a month later that she was hired. "It was really exciting!" she says. "Afterwards, I had to apply for my visa and bam! I was going to South Korea." She now teaches third through sixth grade at an elementary school. Lea found that the children are not very diverse in Korea—"so for most of them, especially the third graders, we are their first personal exposure to foreigners," she says. Lea recommends that those who are interested in teaching should apply for positions in other countries, including Japan, China and those in Europe. Teaching abroad is a great way to travel and make new memorable experiences. "My favorite part about living in Korea is how easy it is to travel around the country," she says. "I love being able to just hop on a train with my friends and go explore a new area. It's relatively cheap, too. If you want to try teaching or just travel while making some money, this job is a good choice."

Recent publications from the

SCHOOL of SCIENCE and MATHEMATICS:

Publications:

Ahmed K., Jason Liu, "Simulation of Energy-Efficient Demand Response for High Performance Computing System," in Proceedings of the 2019 Winter Simulation Conference (WSC 2019), National Harbor, MD, December 2019

Ahmed K., Kazutomo Yoshii, and Samia Tasnim, "Thermal-Aware Power Capping Allocation Model for High Performance Computing Systems," in Proceedings of the 6th International Conference on Computational Science & Computational Intelligence (CSCI 2019), Las Vegas, NV, December 2019

Beatty, Deanna S., Jinu Mathew Valayil, Cody S. Clements, **Kim B. Ritchie**, Frank J. Stewart, and Mark E. Hay. "Variable effects of local management on coral defenses against a thermally regulated bleaching pathogen." Science Advances 5, no. 10 (2019): eaay1048.

Mueller C, Monczak A, Soueidan J, McKinney B, Smott S, Mills T, Ji Y, **Montie EW**. Sound characterization and fine-scale spatial mapping of an estuarine soundscape in the southeastern USA. Accepted with minor revisions. Marine Ecology Progress Series.

Monczak A, McKinney B, Mueller C, **Montie EW**. What's all that racket! Soundscapes, phenology, and biodiversity in estuaries. Submitted to Proceeding of the National Academy of Sciences.

Sevim, V. (2019). Interacting with other people's boundaries, remainders, and static enclosures. Constructivist Foundations, 15(1), 267-269.

Presentations:

Ahmed, K. "Thermal-Aware Power Capping Allocation Model for High Performance Computing Systems", 6th International Conference on Computational Science & Computational Intelligence (CSCI 2019), Las Vegas, NV, December 5-7 2019

Ahmed, K. "Modeling and Simulation of Computer and Network Systems", at NeTS Early Career Workshop 2019, National Science Foundation, Alexandria, VA, August 5-6, 2019

Sevim, V. "Investigating college algebra students' current pre-requisite understandings and testing the effects of an alternative pre-requisite algebra curriculum: A mixed-methods study. Preliminary report." Presented at the Joint Mathematics Meetings (JMM), Denver, CO. January 2020.

Sevim, V. "Assessing High School Students' and College STEM Majors' Interest In Pursuing Secondary Mathematics Teacher Certification in the Lowcountry Region of South Carolina: A Mixed-Methods Study." Presented at the 42nd Annual Meeting of the Southwest Educational Research Association (SERA), San Antonio, TX. February 2019.

Grants received:

DebRoy, Swati, Indranil Ghosh. "Statistical Modeling (Spatial-Temporal Data Analysis) of the Obesity Epidemic in Lowcountry of South Carolina." NSF-funded Center for Undergraduate Research in Mathematics (CURM). Mini-grant: September 2020-May 2021

Fair, Pat, and **Eric Montie**. "Protocol for Collection of Blubber and Skin Samples Using Remote Dart Biopsy." Funded by DoD SERDP - Department of Defense - Strategic Environmental Research and Development Program (SERDP)

Montie, Eric. "Integrating Biological Sound and Noise Measurements into Regional Coastal Ocean Observing Systems (RCOOS) in Estuaries of South Carolina." Funded by National Oceanographic and Atmospheric Administration - Southeast Coastal Ocean Observing Regional Association (SECOORA)

Montie, Eric. "Establish a Dolphin Monitoring and River Health Assessment Program for Chechessee Creek and Colleton River." Funded by the Spring Island Trust.

(**bold** indicates USCB author)

Seining for fish in the May River (photo credit E. Montie)