

Notes from School Chairs:

Spring semester has come and gone, and we returned to traditional in-person graduation sessions to the delight of most students. Even as the successful graduates move on to new jobs and goals, our planning moves ahead for the coming academic year. Now that funding has been approved by the South Carolina legislature, USCB is preparing to tackle a host of deferred maintenance projects. State funding will enable us to address core infrastructural issues at the Beaufort campus and take on “wear and tear” projects that have accumulated over time at the Bluffton campus, where several of our buildings have topped 17 years of service!

As we look to the coming year, we have had a record number of new students apply to USCB for the fall semester of 2022 (390 STEM majors accepted or 22 percent of all accepted fall students). While total enrollments were slightly lower during the pandemic, we anticipate a robust fall class. The Biology Honors cohort for fall 2022 is full for the first time since its inception four years ago. Besides other indicators, we have seen a rise in tuition and housing deposits, which is a solid indicator of a shift toward healthy growth of fall enrollments.

On the research front, USCB topped \$3.3 million in external funding for the first time this year. We had been averaging slightly more than \$1 million annually over the past four years, so this is another indicator of the quality and high research standards that are associated with our science and technology curricula at USCB. This is especially significant for a university of our size. Our average funding per faculty member exceeds many regional mid-sized schools with extensive graduate programs. This is an encouraging trend that helps us to reinforce our pledge to offer a quality degree program with meaningful hands-on undergraduate research experiences for our students. All USCB faculty should be commended for this increase, especially since it comes at a time when all college faculty are applying for limited resources in greater numbers.

--Drs. Brian Canada, Computer Science and Math, and Joe Staton, Natural Sciences

USCB TO RENOVATE FORMER BRIDGES ACADEMY SPACE



Center collaboration [photo: M. Brugler]

In the fall of 2022, USCB will occupy the old Bridges Preparatory School building (formerly the Boys & Girls Club of Beaufort) as part of an

expansion of facilities for our Beaufort campus. Renovations will begin soon to adapt it to serve as new locations for the business offices for the Beaufort campus and space to accommodate our new Cybersecurity program. We received funding recently to develop USCB into an Academic Center of Excellence in Cyber Defense (CAE-CD).

Funding approved by the South Carolina legislature will be used to address several infrastructure issues that have been plaguing the Beaufort campus and similar issues on the newer Bluffton campus. These upgrades, coupled with partnerships with the City of Beaufort, will help to support daily operations and add modern amenities that will enable our students to attain a higher education in more comfortable surroundings.

Dr. Manuel ‘Bud’ Sanders named Carolina Trustee Professor

The Carolina Trustees Professorship Award is presented to a faculty member who is committed to teaching excellence in any phase of the university’s educational mission. Dr. Manuel Sanders, professor in the department of Computer Science and Mathematics, was honored with the 2022 Carolina Trustee Professorship Award earlier this year. As reported on the USC website, “Dr. Manuel ‘Bud’ Sanders, Professor of Mathematics at the University of South Carolina Beaufort, has been improving undergraduate education in semi-rural areas of the Lowcountry since 2005. Dr. Sanders has had multiple responsibilities as Director of General Education and as Department Chair. Dr. Sanders has made an institutional and globally relevant academic difference at USC Beaufort. His growth and expansion of Mathematics, Computational Science, and international opportunities made him the perfect candidate for the Carolina Trustees Professorship for system campuses.”

Congrats on this achievement. Dr. Sanders!



Dr. Sanders after the awards ceremony on May 6, 2022, in Columbia, S. C. (Photo: Yvette Fletcher Sanders)

Dr. Eric Montie receives Governor's Award for Excellence in Scientific Research

Dr. Eric W. Montie received the 2021 Governor's Award for Excellence in Scientific Research at a Predominately Undergraduate Institution at an award ceremony last spring. Dr. Montie was escorted by Dr. Joe Staton to the Capitol Building in Columbia, S.C., where Governor Henry McMaster presented the award. Each year, several faculty members in South Carolina are recognized, but only one faculty member is selected in the category of undergraduate-focused campuses. All other recipients were from USC-Columbia or Clemson.

"His work has helped safeguard the well-being of our South Carolina coast and is especially important to ensure the longevity of the many South Carolina economic engines that are dependent on pristine sea life," McMaster declared, reading from a proclamation about Dr. Montie's award.

Since 2013, Dr. Montie and his team of USCB students have been recording the underwater soundscape of the May River in Bluffton. From 2017 to 2019, they expanded soundscape monitoring to Charleston Harbor, Chechessee Creek, Colleton River, and the North Inlet-Winyah Bay National Estuarine Research Reserve. In 2020, NOAA Integrated Ocean Observing Systems (IOOS) and the Southeast Coastal Ocean Observing Regional Association (SECOORA) invested



The award ceremony in the South Carolina Capitol Building on May 18, 2021. Governor McMaster is fourth from the left, Dr. Montie is third from the right.

in Dr. Montie's lab, and he founded the "Estuarine Soundscape Observatory Network in the Southeast" (ESONS). The Spring Island Trust supports Dr. Montie's work. Congratulations, Dr. Montie!

USCB seniors Tori Sember and Will Crowson join OCEARCH research cruise

Rough seas, high winds and driving rain couldn't dampen the spirits of USCB students Tori Sember and William Crowson, who joined OCEARCH in March to research bacterial films on Atlantic sharks.

Sember and Crowson joined OCEARCH's 43rd Expedition in the western North Atlantic, tagging and tracking sharks, whales, sea turtles and other marine life during their spring break.

Crowson and Sember are student researchers with USCB's Dr. Kim Ritchie, who is investigating properties of beneficial bacteria on the skin of sharks. During their March 4-24 expedition in waters off North Carolina, South Carolina, Georgia and Florida, both students enjoyed collaboration and camaraderie with other scientists.

"We got to work with the best of the best," Crowson said.

Bad weather forced OCEARCH to remain in port for several days, but they were lucky to catch one white shark, which Crowson swabbed in seven places for bacterial samples. "It was out



Tori Sember plates bacteria collected from a shark. [Photo Chris Ross/OCEARCH]



William Crowson swabs a white shark. [Photo Chris Ross/OCEARCH]

of the water for 15 minutes max, and then it swam away," he said.

Tori Sember plated the samples in petri dishes and tracked the growth of bacteria colonies for the rest of their time at sea. Dr. Ritchie studies the samples and analyzes their composition. Her previous research has shown that the external film on a shark or ray can reflect the general health and well-being of the animal. The beneficial bacteria on their skin have the potential to be a new source of novel antibiotics. The study is funded by the Port Royal Sound Foundation and other sources.

"Sharks heal their wounds very quickly and almost never get skin infections," Sember said. "The rising resistance to current antibiotics means we're very interested in possible applications for new antibiotics for humans." Sember will begin graduate school in Northeastern University's Three Seas Program in July 2022. Crowson is finishing his classes and will earn his degree this summer.

Two new hires in Natural Sciences for fall 2022

We would like to welcome two new hires to the Natural Sciences faculty this fall: Ms. Heather Thornton and Mr. W. Patrick Boyle.

Ms. Heather Thornton is hardly “new.” She has been teaching extensively with us at USCB after serving several years in advising and teaching at Armstrong University (now Georgia Southern Armstrong campus). Ms. Thornton teaches in the biology freshman curriculum, specifically courses for the pre-professional tracts and a popular non-major’s course, “Oceans and Society.” We are happy to have her joining us full-time starting in the fall semester. She has a master’s in Zoology from Clemson University and a master’s in High Education from Georgia Southern University. She will be replacing Ms. Kathryn Madden, who recently accepted a full-time position in our Department of Education. Congratulations to both dedicated educators!



Heather Thornton



W. Patrick Boyle

Mr. W. Patrick Boyle also joins us this fall. He has a master’s degree in Physics from Miami University in Ohio where his research focused on Physics education. He subsequently taught Physics at Miami University and served as lead instructor for the Physics major first year experience, called SCALE-UP, focused on increasing student success and retention in the STEM majors. SCALE-UP (Student-Centered Activities for Large-Enrollment Undergraduate Programs) is an approach to teaching introductory physics classes that encourages students to work together to solve problems in groups in the classroom. Mr. Boyle hopes to extend this process to STEM learning at USCB to help integrate lab and lecture into a “studio” environment, blurring the boundaries between the classical lecture/laboratory construct.

Documentary film shoot on-location at USCB

In early December, a film crew working on a NOVA-funded documentary for PBS called “Looking for Lee and Liza,” sought our assistance in researching their film project. It tells the story of director Byron Hurt’s search for information about his oldest ancestors, Lee Hurt Sr. and Liza Waller, who came to this country through the Port of Savannah in the 19th century. Family members tried using commercial DNA tests to locate other relatives but after running into the same wall experienced by many People of Color researching their history, director Hurt reached out to Dr. Fatimah Jackson, professor of Biology and director of the W. Montague Cobb Research Laboratory at Howard University. Dr. Jackson has published widely on human and plant evolutionary genetics and was willing to lend her expertise to the project.

Dr. Jackson contacted Dr. Joe Staton at USCB because of his background in evolutionary genetics. The shoot took place December 3, when the crew drove from their filming location in Savannah to the Bluffton campus. Mr. Hurt and Dr. Jackson were accompanied by Mr. Hurt’s cousins—Mr. Richard Rogers of Colorado and Ms. Jandra Bonner of Fort Worth, Texas. Rounding out the crew were Ms. Natalie Bullock Brown, the film’s producer, and Mr. Lendl Tellington, the cinematographer. After a half day of shooting and a group lunch, the film crew thanked Dr. Staton and USCB for their hospitality and left for the airport. We look forward to this documentary coming to PBS in the future!



L to R: Dr. Joe Staton, Mr. Byron Hurt (director), Mr. Richard Rogers, Ms. Jandra Bonner, Dr. Fatimah Jackson, Ms. Natalie Bullock Brown, and Mr. Lendl Tellington

Recent publications from the SCHOOL of SCIENCE and MATHEMATICS:

PUBLICATIONS:

Beatty, DS, CS Clements, JM Valayil, SY Jarvis, **KB Ritchie**, FJ Stewart, ME Hay. 2022. Variance of Coral Anti-Pathogen Defense in Response to Transplantation between Coral-and Macroalgal-Dominated Reefs. Coral Reefs.

Bledsoe-Becerra, YM, IS Whittaker, J. Horowitz, **KM Naranjo, J Johnson-Rosemond, KH Mullins, KM Cunningham, S Shetty, SN Messinides, MS Behney, JA Fehsal, AN Watson, KE McKnight**, TW Nasiadka, H Popa, **DT Pettay**, HJ Appiah-Madson, DL Distel, **MR Brugler** (2022) Mitogenomics reveals low variation within a trigenic complex of black corals from the North Pacific Ocean. *Organisms Diversity & Evolution*, 22(2), 343-353.

Carroll, TM, DC Rogers, KA Crandall (2021). A New Morphotype of the Freshwater Crayfish *Cambarus hubrichti* (Decapoda: Cambaridae) from a Karst spring cave system, with comments on its ecology. In: Tadashi Kawai and D. Christopher Rogers, Editors. *Recent Advances in Freshwater Crustacean Biodiversity and Conservation*. CRC Press.

Chomicki, G, R Beinart, C Prada, and **KB Ritchie** (2022) Editorial: Symbiotic Relationships as Shapers of Biodiversity. *Frontiers in Ecology and Evolution*. 10:850572. doi: 10.3389/fevo.2022.850572

Muehleman, VL, CJ Fitzgerald, **S Gantt**, B Hughes, L Breland, A Warren, **S Debroy** (2021) Salad Bar Use among Middle School Children in a Socio-economically Disadvantaged Rural County. *Health Behavior and Policy Review*. 8(6):609-19.

Prada, C., T Lopez-Londono, FJ Pollock, S Roitman, **KB Ritchie**, DR Levitan, N Knowlton, C Woodley, R Iglesias-Prieto, M Medina (2021) Linking photoacclimation responses and microbiome shifts between depth-segregated sibling species of reef corals. *bioRxiv*. <https://doi.org/10.1098/rsos.211591>

Pratte, ZA, C Perry, AD Dove, LA Hoopes, **KB Ritchie**, RE Hueter, C Fischer, AL Newton, FJ Stewart (2022) Microbiome structure in large pelagic sharks with distinct feeding ecologies. *Animal Microbiome*, 4(1), 1-16.

Perry, CT, ZA Pratte, A Clavere-Graciette, **KB Ritchie**, RE Hueter, AL Newton, GC Fischer, EA Dinsdale, MP Doane, KA Wilkinson, K Bassos-Hull, K Lyons, ADM Dove, LA Hoopes, FJ Stewart (2021) Elasmobranch microbiomes: emerging patterns and implications for host health and ecology. *Animal microbiome*, 3(1), 1-15.

Song Z, Salas AK, **Montie E**, Zhang Y, Mooney TA. (2021). Sound pressure and particle motion components of the snaps produced by two snapping shrimp species (*Alpheus heterochaelis* and *Alpheus angulosus*). *The Journal of the Acoustical Society of America* 150(5):3288-3301

Stevens, LE, AA Aly, SM Arpin, I Apostolova, GM Ashley, PQ Barba, J Barquin, A Beauger, L Benaabidate, SU Bhat, L Bouchaou, M Cantonati, **TM Carroll**, ...O Voltaire (2021). The ecological integrity of spring ecosystems: A global review. In: Reference Module in Earth Systems and Environmental Sciences. Elsevier Reference Collection, Elsevier Publishing.

Williams, AK, S Le Marchand, E Whereat, **DT Pettay** KJ Coyne (2022) *Heterosigma akashiwo* does not serve as prey and chloroplast donor for the toxic dinoflagellate, *Dinophysis acuminata*. *Harmful Algae* 111: 102168.

GRANTS:

Brugler, MR. The North Inlet - Winyah Bay National Estuarine Research Reserve. Funded by: Office of Coastal Management/NOAA/DOC. USCB Award amount: \$4,678.00 to analyze eDNA samples collected. Awarded on: January 12, 2022.

Erdei, R, S Swofford, M Jones-Williams, B Canada (2022). Empowering the Underserved: Disrupting Educational Barriers in Cybersecurity (Proposal: 2220926). NFS Scholarships in Science, Technology, Engineering, and Mathematics (S-STEM) Grant Application (Program Solicitation: NSF 22-527) \$1,499,738 (pending)

Jones Williams, M, L. Ricardo (2022) "Audacious Minds: An Educational Play Featuring Black Women Mathematicians." RISE: Research Initiative for Summer Engagement Grant.

Montie, E (2022 – 2023) Port Royal Sound Foundation (PRSF). (\$37,500). Bottlenose Dolphin Monitoring in the Port Royal Sound Area – Establishing a Flagship Program for the Port Royal Sound Foundation".

Montie, E (co-PI) NOAA IOOS/SECOORA (2021 – 2026). (Total subaward to Montie \$420,000). "Estuarine Soundscape Observatory Network in the Southeast". PI – Debra Hernandez (SECOORA) – renewed on July 1st

Pettay, DT (2022) "Establishing a Continuous Environmental Monitoring Station for the Port Royal Sound Estuary" - Community Foundation of the Lowcountry - \$75,000

Sevim, V, D Fusi, M Jones Williams (2022) Math Opportunities in the Summer (MOS): USCB Summer Math Camp for High School Students. Community Foundation of the Lowcountry Grant. Received: \$33,075.00.

Zhang, X (2022) "Enabling PeerCloud in Vehicular Networks: Feasibility and Reliability of Funded Vehicle-to-Vehicle Offloading", RISE: Research Initiative for Summer Engagement Grant.

PRESENTATIONS:

Canada, BA (2022) (Not) Phoning It In: Re-Engineering Bugs 'N Boo Hags for Mobile Touchscreens, 2022 Film and Digital Media Symposium, Beaufort International Film Festival, Beaufort, SC, February.

Jones Williams, M, D Fusi, J Oviedo (2022) "High School Students' Perspectives on the Benefits of USCB MOS Program Participation." presented at the 2022 SC EPSCoR State Conference 22 April in Columbia, SC.

Sevim, V (2022) "The role of exploring function graphs in different axis orientations." Paper presented at the 45th Annual Meeting of the Southwest Educational Research Association (SERA), New Orleans, LA, February 23-25, 2022.

(**bold** are USCB faculty/students)