

# *The Coastal Current*



**Inside: alumnus Dakota Hughes performs a reptile survey at Huntington Beach State Park. Page 9**



# A Note from the Vice Dean

I was excited to join Coastal Carolina University (CCU) and an outstanding marine science community in the middle of August. Hurricane Florence offered a bit more excitement than I needed, but discussing the slow-moving storm and ways to keep our boats safe gave me an opportunity to get to know our captains and other University folk quickly. It was also a chance for my wife and me to get to know our neighbors as we discussed strategies for weathering the storm. By the time school started again, I was more convinced than ever that coming to CCU and coastal South Carolina was the right choice.

I came to CCU because I wanted to be part of a program focused on teaching undergraduates and graduates about coastal and marine science and advancing our understanding of marine systems. My background is in biological oceanography and marine ecology. I earned my Ph.D. from the University of North Carolina at Chapel Hill and spent a lot of time as a graduate student and later as a professor at East Carolina University studying the marshes, seagrass beds, and offshore hard bottom reefs of North Carolina. I was a professor at Bates College for the past 24 years, where I conducted research with undergraduates focused on the Maine coast and Arctic ecosystems. From September 2014 through August 2016, I worked as a program officer at the National Science Foundation. All of this experience convinced me of the importance of marine science education and research.

CCU plays an important role in advancing our knowledge of coastal and marine systems. Coastal communities and ecosystems are bearing the brunt of climate change, and this is particularly evident in the Southeast United States. CCU students have a natural laboratory for studying the impacts of climate change on coastal systems, an impressive faculty, and excellent resources to help them in their educational journey. My major tasks as vice dean will be supporting programs and finding the resources necessary to advance the marine educational and research programs at Coastal. Students who graduate from CCU go on to make important contributions in their fields, and the research at CCU is increasing our understanding of marine systems. That is a legacy I look forward to helping continue.

I would like to get to know as many of you as possible. My door is open, and I typically have tea at 1000 and 1400. Feel free to stop by.

William G. Ambrose Jr., Ph.D.  
Vice Dean  
School of the Coastal Environment (SCE)



Photo courtesy of William Ambrose



Summer 2018 brought big changes to the graduate students, faculty, and staff in the Coastal and Marine Systems Science (CMSS) graduate program, as people said goodbye to their old offices and labs in the Burroughs & Chapin Center for Marine and Wetland Studies (BCCMWS) for a fresh start in the Coastal Science Center (CSC). Burroughs & Chapin is now the new home of the Osher Lifelong Learning Institute at CCU (OLLI).

With the excitement of a new location comes the bittersweet feelings of leaving behind the brightly colored accent walls of Burroughs & Chapin. But even as students and faculty said goodbye, opportunities to make a new home in the halls of CSC began taking shape. The extra space in CSC allows room for growth—just in time for the brand new cohort of graduate students who arrived at CSC in August. Some of the perks of being relocated to CSC include access to two large computer labs as well as student office and lounge spaces. CSC houses the Environmental Quality Lab, the Environmental Fluids Lab, the Groundwater Discharge Measurement Facility, and the Coastal Geosystems Lab, in addition to the CMSS offices.

## Staff Spotlight

The School of the Coastal Environment at CCU is full of incredible staff members. In an effort to show our appreciation for our valuable staff, we'd like to highlight a different person each issue and thank them for everything they do for us.

For our first Staff Highlight, we'd like to give a big shout-out to Julie Quinn in the CSC. Quinn graduated from Vincennes University in Indiana with a degree in business management. Before moving to the coast, she worked at two banks over the course of 19 years, serving from teller to branch manager. She then worked at the University of Kentucky in Lexington. In 2007, Quinn moved to South Carolina with her husband and started her job at CCU as the administrative assistant for CMSS. Quinn's main duties include: purchasing supplies for the department, faculty, and students; processing paperwork for travel; and approving payroll timesheets for all department faculty and students. Quinn never fails to help students and faculty, and she does it all with a smile on her face. She is always a welcoming presence in the office, and those of us in CMSS who have had to rush to her for help know for a fact how great she is on the spot. If students ever have questions about administrative topics within the program, they can stop by Quinn's office in the CSC, room 151-I.



Quinn at her desk ready to help!

# Faculty Spotlight: Erin Burge, Ph.D., works with SharkCam off the coast of Cape Fear

There is no shortage of faculty at CCU working on an exciting range of projects. Erin Burge, Ph.D., is just one example of someone whose diverse interests have inspired him to work on numerous research projects across the SCE. Burge first secured a bachelor's degree of biology at University of Kentucky in Lexington in 1996, where he worked with both marine and molecular biologists. As an undergraduate, Burge completed the Research Experiences for Undergraduates program through the National Science Foundation at the Virginia Institute of Marine Science, where he would go on to earn his Ph.D. His dissertation was focused on the molecular immunology of fish bacterial diseases. Burge then went on to a postdoc at the



Erin Burge holding a giant lobster off the North Carolina shore.

Hollings Marine Laboratory at the College of Charleston. At the Hollings Lab, Burge continued his research on molecular immunology and physiology with a new focus on invertebrate disease resistance. In 2006, Burge joined the faculty at CCU, where his research has ranged widely from host/parasite work to bacterial water quality testing in joint projects with the Environmental Quality Lab.

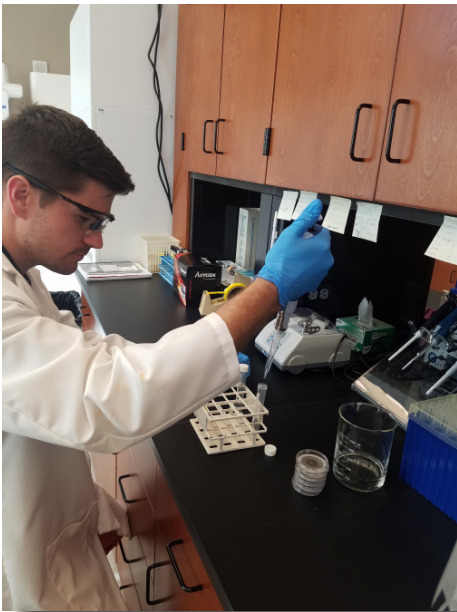
Currently, Burge's favorite project involves the use of an underwater HD camera called SharkCam to monitor fish populations. The self-cleaning, solar-powered camera, which is installed at Frying Pan Tower, 35 miles off the coast of Cape Fear, N.C., shows a live feed that anyone can access at: <https://explore.org/livecams/sharks/shark-cam>. Burge called the project "visually exciting" and "engaging" for students who study fishes and examine relative abundance, seasonality, and fish behavior. The camera serves as a proxy for in-person observations and allows long-term, high-resolution understanding of fish populations in an offshore area that is difficult to access routinely since it is so far from shore.

For Burge, it's the diversity of research interests within CCU's faculty in the SCE that he enjoys most. "Because [the SCE] is multidisciplinary, there is a real chance to work with experts in other areas." Burge also appreciates the ability to work with both graduate and undergraduate students. He is currently directing several undergrads and serving on graduate committees. When he finds the time, Burge also directs the study abroad Maymester program to Jamaica, where students can earn college credits while studying coral reef ecology.

*If you have questions about Burge's research or the Maymester program, you can find him in Science Annex 2 Room 102-E, or contact him at [eburge@coastal.edu](mailto:eburge@coastal.edu).*



# The effects of climate change on freshwater streams: one graduate student's research



Hunter Pates working up samples in the lab

Hunter Pates is a graduate student at CCU. He studies under his major professor Vlad Gulis, Ph.D., and his thesis is “[the] Effects of warming on fungal and bacterial activity associated with decaying leaf litter in a stream microcosm experiment.” After graduating in 2016 from Misericordia University in Dallas, Pa., with a major in biology and a minor in chemistry, Pates looked for options to continue his research in a graduate program. Given his prior experience studying streams and his interest in wetlands and marshes, pursuing graduate study at CCU on stream leaf litter was a great fit.

“[CCU] is a nice-sized school [and] classes are not too big, so faculty are very hands-on with their research. This also makes it easy to gain access to resources needed for [a student's] project.”

The bulk of Pates' research takes place in the lab, but he also spends necessary time in the field. Pates began by taking samples of leaf litter that spent four days decomposing in a stream in Otto, N.C., and brought them back to his lab for analysis. Pates placed those samples in specialized test tubes (referred to as environmental chambers) to simulate the decomposition process. He incubated samples at different temperatures ranging from 4 to 20 degrees Celsius. After one month, the environmental chambers were cultured to identify the different fungi and microbes present. The chambers were also tested to measure the amount of fungi and bacteria on the litter and how well they decomposed the leaf litter. At the end of his research, Pates will have studied five main aspects of leaf litter: litter decomposition rate, fungal biomass/growth rate, respiration, cumulative spore production, and bacterial production. These results will then be characterized for each respective temperature setting and compared to see any trends. With this study, Pates hopes to predict the effects that future climate change will have on these natural processes.

Pates enjoys the research he does at CCU and will graduate in May 2019. He hopes to find a job working for a state or government agency in his field. With his experience at CCU coming to an end, Pates plans to finish writing his thesis and to get that job he has been working towards.

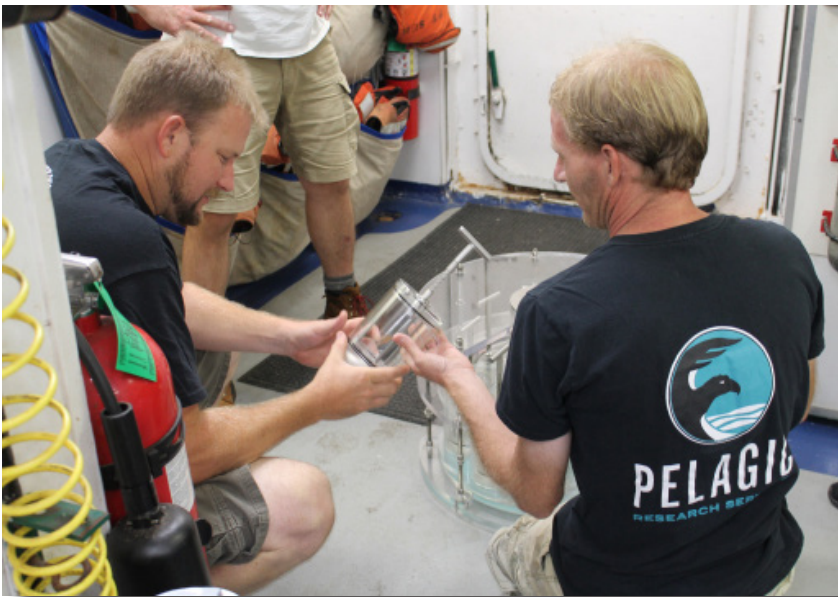


Left: Environmental chambers in Pates' lab.

Right: Leaf litter at the Coweta River site in North Carolina.

# Students get first-hand experience aboard research vessel on the Gulf Coast

GULFPORT, Miss. - At the end of August, Richard Peterson Ph.D., of CCU, along with several graduate students and two undergraduate students, took a research cruise to the Gulf of Mexico, traveling to two study sites: GC699 and GC600. The science party consisted of Peterson; CCU graduate students Matt Kurpiel, Elana Ames, and Charlotte Kollman; visiting Ph.D. student from China Jianan Liu; and undergraduate CCU students Alec Villafana and Jianna Wankel. One Ph.D. student from the University of Georgia (UGA), Andy Montgomery, was also on board as part of an ongoing collaboration between Peterson's lab at CCU and Dr. Mandy Joye's lab at UGA. The expedition sought to collect oil from deep sea oil vents as well as water column samples and sediment cores.



Peterson getting a first look at the brand new oil sampler used for collecting oil seeping from the seafloor. The sampler, which was designed specifically for the project, was sent down with the *ROV Odysseus*, and collected oil directly through specialized vents in the bottom of the glass cylinders.

the science party collected oil directly from seepage sites on the sea floor, this information will also be beneficial in the event of another oil spill in the Gulf, given the prevalence of drill sites in the area. Peterson's lab used oil in preliminary experiments that was collected directly from the water after the Deep Water Horizon event in 2010. Water column samples were taken most nights of the six-day cruise, and the remotely operated underwater vehicle (ROV) onboard collected numerous sediment push-cores.

Peterson made use of the University of Southern Mississippi (USM)'s vessel, the *R/V Point Sur*, as well as much of its gear, including a CTD rosette used in water column sampling that measures conductivity, temperature, and depth. USM also opened up its labs on shore for Kurpiel, where he completed time-sensitive experiments on the oil immediately after the crew made landfall. Also onboard was the *ROV Odysseus*, owned and operated by Ed Cassano

The trip was the first of two fully funded expeditions, coming after nearly 10 years of research for Peterson, and was Peterson's first time as chief scientist at sea. The two-year project was funded through the Gulf of Mississippi Research Initiative (GoMRI), with a \$671,000 budget. Peterson secured the funding through GoMRI as an effort to understand how oil behaves once it is injected into the ocean. More specifically, the science party studied the timeline of dispersal from the locations where oil is being introduced, using radium isotopes in the oil as a geochronometer. While

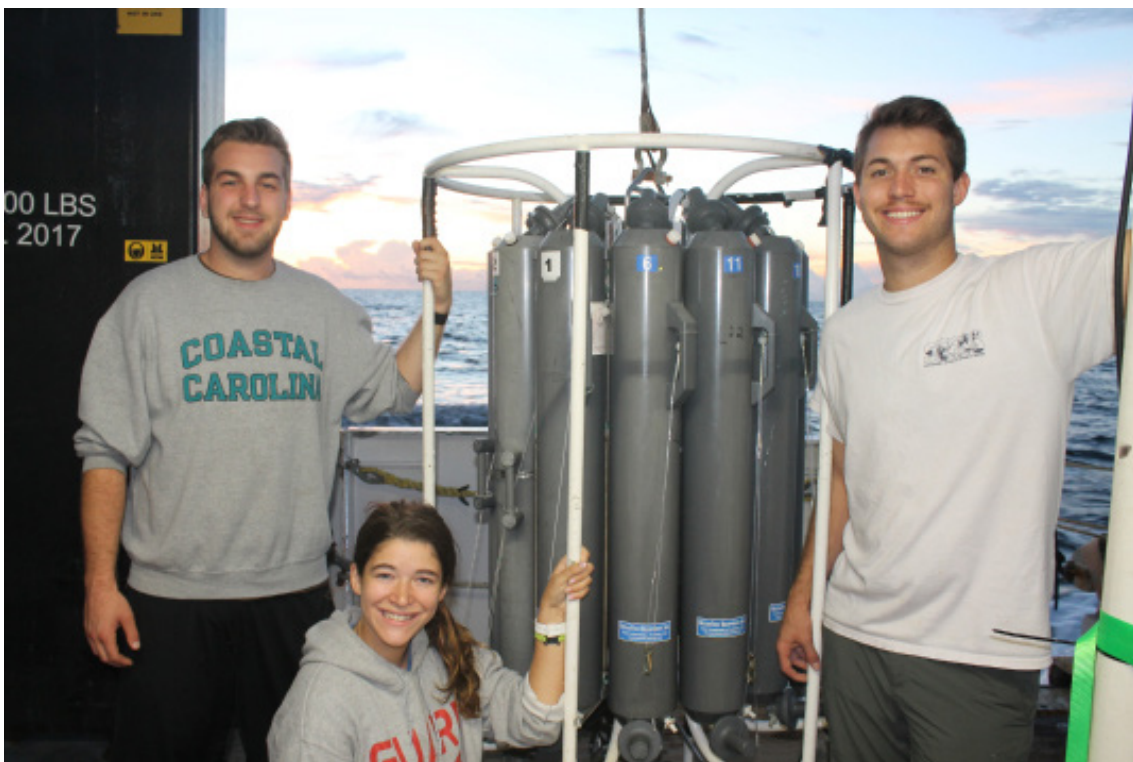


and his team at Pelagic Research Services. The *R/V Point Sur* and Pelagic crews were instrumental in the trip's success, and both were happy to let the students have the opportunity to learn how to operate the different machinery. Cassano even invited the students to sit in the control room for the ROV dives and get an inside look into the intricacies of ROV operation.

As Peterson's lab begins to go through the vast amount of data collected on the first trip, they are already setting their sights on the second expedition, scheduled for the spring of 2019. For Kurpiel, whose thesis will be based on the data collected from both trips, the opportunity was unlike any other. He called the cruise "an amazing way to get hands-on practice in the field." "Operating in the lab at sea is completely different than the familiar one at home," said Kurpiel, who celebrated his birthday onboard. "There are so many new variables to account for, and it really tests your dedication. But in the end, it's completely worth the long hours and hard work because you get this incredible experience and knowledge you can't learn anywhere else."



Graduate student Elana Ames operating the CTD during the night dives.

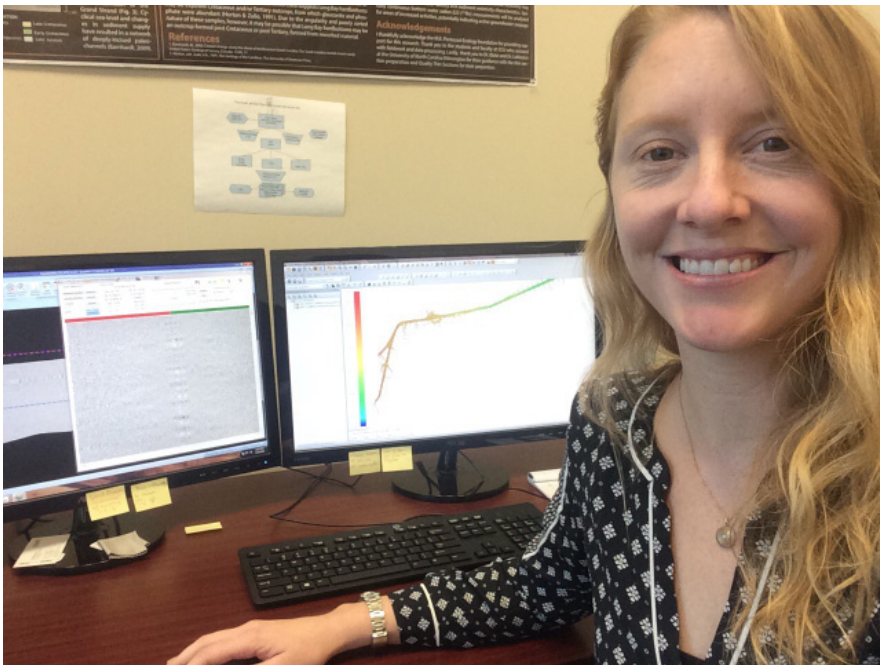


CCU graduate and undergraduate students pose with the CTD rosette on the first night of sampling (pictured from left to right: Kurpiel, Wankel, and Villafana).

# How one graduate is making the most of her CCU master's degree

Alumna Cathryn Wheaton graduated in August 2018 with a master's degree in coastal and marine systems science and has landed an exciting career as a marine geoscientist. While attending CCU, Wheaton worked on a coastal geology project titled "Hardbottom characterization and relationship to the geologic framework in Long Bay, South Carolina," alongside major professors Jenna Hill, Ph.D., and Till Hanebuth, Ph.D. Wheaton said she and Hill created the project from scratch. As a graduate student, Wheaton endured every challenge of the project first hand, from grant writing to data analysis. "It gave me the opportunity to develop a set of objectives and hypotheses, to plan where we were going to survey and what methods we were going to use, and to execute a project from start to finish."

Wheaton is now working for Oceaneering International Inc. in Hanover, Md. Oceaneering International is a large contracting company with numerous departments dedicated to different



Wheaton processes data in her office at Oceaneering International Inc.

projects. Wheaton processes geophysical data to help plan projects for clients. For example, if a company wants to build a wind farm off the Atlantic coast, the builders need an in-depth bathymetric understanding of the sea floor. This information, that someone like Wheaton would collect, includes studies of potential benthic habitat presence or the possibility that an architectural site is in the area, such as a shipwreck. Wheaton, using the skills she gained from studying at CCU, processes side-scan sonar and CHIRP sub-

bottom data to interpret the ocean floor, and is also involved in data management and client interaction.

However, earning a degree and landing a job in the same field are two sides of the same coin. When a graduating student applies for jobs, Wheaton said there are a few things he or she should keep in mind: Apply early and often, apply to anything that sounds remotely interesting, and do not get discouraged when a company chooses another candidate. "I applied for 30+ jobs and got multiple rejection emails. But I got multiple interviews too ... Apply to everything!" With her graduate education from CCU and priceless experience working on her coastal geology project, Wheaton landed a job in an exciting field and looks forward to where it will take her.



# Undergraduate alumnus works as park ranger at Huntington Beach State Park

Dakota Hughes comes from southwestern Virginia and began community college in 2013, earning his associate degree in biology two years later. He finished his bachelor's degree at CCU, majoring in marine science. On top of normal school work, Hughes studied abroad with Erin Burge, Ph.D., during Maymester 2016 in Jamaica, studying the behavioral defensive response of damselfish, which resulted in a published study.

Only a few days after graduating from CCU in 2017, Hughes began working at Huntington Beach State Park as assistant park ranger. In November 2017, he was promoted to park naturalist. His work covers topics from environmental education, to trail maintenance, to conservation surveys, allowing him to combine all he has learned from CCU. Hughes takes part in sea turtle nest monitoring, seabeach amaranth planting, dune renourishment, monarch butterfly stations, shorebird. One important duty Hughes has is to perform regular reptile surveys of the state park. During the reptile surveys, Hughes encounters many snakes, such as the one pictured on the cover page. The reptile surveys allow the park to monitor the health and size of local snake populations in the area.

In addition to this position, Hughes also dives for Ripley's Aquarium in Myrtle Beach. He began this part-time position in mid-2018, leading shows and feeding and cleaning tanks for all kinds of animals, from tropical fish and eels to stingrays and sharks. Having two jobs in his field goes to show how well CCU prepared him for his career path. Hughes reflects and remarks on how Coastal helped him get to where he is now. Because CCU is so close to the ocean, the classroom was often taken outside. Hughes was familiar with salt marshes, ocean systems, and the local parks even before he started job hunting.

Looking toward the future, Hughes hopes to keep up the fieldwork. He is also considering pursuing a master's degree researching coral reefs. While he is enjoying his current jobs and projects, Hughes knows this is just the beginning of his career.



Dakota Hughes is a marine science alumnus working as a naturalist for Huntington State Park and as a SCUBA diver for Ripley's Aquarium. Here he is performing a reptile survey.



Hughes SCUBA diving in Jamaican waters with a lionfish.

# A Note from the Editors



Charlotte Kollman

I was excited to join Clare for the second edition of The Coastal Current for the Fall 2018 semester. There have been a lot of new and exciting changes in the School of the Coastal Environment (SCE), and I'm happy to have the chance to share everything with our readers. For this issue, we really wanted to focus on what our students and faculty are doing outside of the classroom and highlight several pathways to working in the field as a marine scientist. I believe opportunities to work in marine science will grow as more global issues arise that require both the critical-thinking skills and the diverse knowledge within the marine sciences, from ecology to geology, that the programs in the SCE foster. So many of our faculty and students are working on diverse and innovative projects, and I can't wait to continue learning and writing about them. Clare worked

hard to help get this newsletter off the ground, and I wish her the best of luck as she takes the next step and graduates this December.

Make sure to keep an eye out for the spring issue, in which we take a look at the environmental initiatives within the SCE and highlight a few special undergraduates working overtime to help make lasting change in our area! -Charlotte, co-editor

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Clare J. Nolan

Reflecting on The Coastal Current's debut last spring, I am honored to announce this semester's new issue. Though it may not seem different to some, I believe that with the help of co-editor Charlotte and one year of groundwork behind us, this edition is even more sleek and professional. Looking ahead, it is easier to see the growth of this newsletter and its value on CCU's campus. Something that I have also witnessed through this newsletter is how open and welcoming our fellow SCE members are. There is a charm to the SCE that will always be reflected in The Coastal Current.

I would like to thank Rich Viso, Ph.D., and Karen Fuss for helping guide this project. And a special thanks to Charlotte – she has been a great addition to the newsletter and a great peer to work alongside. I have no doubt The Coastal Current is in good hands with her after I graduate. This newsletter is still in its beginning stages, and my position as co-editor has been a fulfilling one. As the SCE program grows, the newsletter will capture its journey and will continue to foster community within the department. I am proud to have helped start it. -Clare, co-editor

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# FAST FACTS

## *Fall 2018 enrollment*

<u>MSCI undergraduates</u>		<u>CMSS graduate students</u>	
Freshmen	357	CMWS graduate	38
Sophomores	223	MSCI Ph.D.	12
Juniors	161		
Seniors	164		

## *Degrees Awarded*

<u>MSCI undergraduates</u>		<u>CMSS graduate students</u>	
May 2018	81	May 2018	3
August 2018	15	August 2018	9

*Calling all alumni! If you are doing something interesting in the coastal environment that you would like us to feature in any upcoming newsletters, we would love to hear from you! Contact Charlotte at [ckollman@coastal.edu](mailto:ckollman@coastal.edu).*



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Find us online: [coastal.edu/sce/coastalcurrent](http://coastal.edu/sce/coastalcurrent)

School of the Coastal Environment

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