

# SCIENTIFIC LITERACY AND WORKFORCE DEVELOPMENT

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## IMPACTS

### S.C. Sea Grant Consortium Contributes to Adoption of New S.C. State Science Standards

#### E.V. Bell, S.C. Sea Grant Consortium

**Recap:** S.C. Sea Grant Consortium contributed writing and content expertise for the creation of the 2021 *South Carolina College- and Career-Ready State Science Standards* that were formally adopted by the S.C. Department of Education.

**Relevance:** S.C. formal educators use subject- and grade-specific standards endorsed by the S.C. Department of Education (SCDOE) to guide instruction and assessment of their students. Although the current science standards are robust in content and assessment, South Carolina students rank nationally near the bottom in science proficiency, leading to a dearth of skilled individuals entering STEM careers. As industrial giants continue to move to the state, there is a growing demand for a skilled STEM workforce.

**Response:** In 2020, the SCDOE amassed a team of more than 500 science and education professionals, including the Consortium, to advise on the construction of a new version of science standards that outlines a blended approach of applied science content and skills for the purposes of increasing science literacy and preparing youth for STEM-based careers. Additionally, the new science standards include concepts of climate change and evolution previously absent in earlier versions.

**Results:** In June 2021, the SCDOE officially adopted the new *South Carolina Career- and College-Ready Science Standards* for use beginning in the 2022-2023 school year.

### S.C. Sea Grant Consortium's Environmental Education Program Adopted by State Environmental Education Organization

#### E.V. Bell, S.C. Sea Grant Consortium

**Recap:** S.C. Sea Grant Consortium partnered with the Environmental Education Association of South Carolina to facilitate the formal adoption of the Palmetto Environmental Education Certification program.

**Relevance:** In 2014, the Consortium co-led the development of the Palmetto Environmental Education Certification (PEEC), the state's first environmental education (EE) certification. This two-year program uses the six thematic EE best practices outlined by the North American Association for Environmental Education as its foundation. Since 2018, PEEC has been fiscally administered and programmatically coordinated by the Consortium. As PEEC continues to grow, addressing future capacity and financial demands are imperative to the program's long-term sustainability.

**Response:** The Environmental Education Association of South Carolina (EEASC), of which the Consortium is a long-standing board member, is the state affiliate for NAAEE and a founding member of PEEC. EEASC continues to grow in membership, credibility, programmatic capacity, and financially with robust sponsorship and fundraising

campaigns. The alignment of PEEC's goals with EEASC's mission provides the necessary support to ensure PEEC's future sustainability and long-term growth of the program throughout the state.

**Results:** In February 2021, the EEASC board of directors officially voted to adopt PEEC as a flagship program, assuming both programmatic coordination and fiscal responsibility.

## **S.C. Sea Grant Consortium's Beach Sweep/River Sweep Litter Cleanup Saves Taxpayers \$132,968 in 2021**

**Susan Ferris Hill, S.C. Sea Grant Consortium**

**Recap:** Beach Sweep/River Sweep has economic, environmental, and societal benefits. In 2021, despite the ongoing COVID-19 pandemic, 1,553 coastal volunteers collected nearly 4.5 tons of litter, and covered 108 miles of South Carolina's beaches, marshes, and waterways. There were 60 site captains at 42 cleanup locations in the coastal counties. The number of volunteer hours was 4,659. The dollar value of volunteers' time equals \$132,968. The state's natural resources are cleaner, safer, and more beautiful for all to enjoy.

**Relevance:** Natural resources account for \$33.4 billion in annual economic output for the state (S.C. Dept. of Natural Resources, 2016). And according to the S.C. Dept. of Parks, Recreation, and Tourism, tourism spending reached \$22.6 billion in 2017. Clean beaches, marshes, and waterways are critical to support commercial and recreational boating and fishing, wildlife viewing, tourism, and other industries. A litter-free environment also contributes positively to quality of life.

**Response:** The S.C. Sea Grant Consortium and S.C. Dept. of Natural Resources organize the Beach Sweep/River Sweep litter cleanup. Through the use of volunteers, the cleanup contributes to the economic, environmental, and societal well-being of the state. Participants and the public are more informed about natural resource issues, such as litter's detrimental effects on the landscape and wildlife, and people are empowered to take action and become environmental stewards.

**Results:** In 2021, despite the ongoing COVID-19 pandemic, 1,553 coastal volunteers collected nearly 4.5 tons of litter, covered 108 miles of beaches, marshes, and waterways, and recycled as much as possible. There were 60 site captains at 42 cleanup locations. The number of coastal volunteer hours was 4,659. The dollar value of volunteers' time equals \$132,968 (Independent Sector, 2021).

## **S.C. Sea Grant Consortium Launches "Careers" Microsite to Broaden Reach to Diverse Undergraduate and Graduate Students**

**Susan Lovelace, S.C. Sea Grant Consortium**

**Recap:** Developed by the Consortium's Diversity, Equity and Inclusion Workgroup to reach a diverse populations of undergraduate and graduate students about job opportunities at the S.C. Sea Grant Consortium, the new "Careers" website provides information about jobs, fellowships, and internships, as well as an opportunity to match students with a mentor on the Consortium staff. Mentors answer questions about what Sea Grant and related jobs are needed, career and fellowship opportunities, and education requirements.

**Relevance:** There is a need to engage a diverse population of undergraduate and graduate students in S.C. Sea Grant Consortium research, fellowships, internships, mentorships, and professional staff opportunities including

business management, accounting, communications, graphic design and human resources In addition, there is an increasingly high demand for a workforce skilled in Science, Technology, Engineering, and Math (STEM) disciplines to accommodate the industrial growth of South Carolina and to meet workforce needs in ocean sciences fields.

**Response:** In September 2021, the Consortium’s Diversity, Equity and Inclusion Workgroup launched a “Careers” microsite ([careers.scseagrant.org](https://careers.scseagrant.org)) for undergraduate and graduate students who may be interested in job opportunities, fellowships, internships, and locating a mentor in their field of study. The website introduces students to the Consortium, lists member institutions, describes the variety of job needs in Sea Grant and encourages students to be matched with a mentor on staff.

**Results:** Twenty-nine students have left their contact information for a mentor contact. Of those, eleven have been connected to mentors. Students contacted have been interested in water conservation, economics, environmental policy, environmental law, and public health.

## ACCOMPLISHMENTS

### S.C. Sea Grant Consortium Secures \$1,000 for Diversity, Equity, and Inclusion Training for Palmetto Environmental Education Certification Program

#### E.V. Bell, S.C. Sea Grant Consortium

**Recap:** The S.C. Sea Grant Consortium secured \$1,000 from the North American Association for Environmental Education to provide cultural humility training as part of the Palmetto Environmental Education Certification program.

**Relevance:** In 2018, the Consortium launched the Palmetto Environmental Education Certification (PEEC) program, S.C.’s first environmental education certification program for educators. The program aims to train educators who are representative of the diverse communities and regions within the state. Based on 2019 U.S. Census Bureau data, 37.4% of S.C. identifies as a person of color; however, a lack of diversity persists within the careers of environmental sciences, education, and interpretation.

**Response:** The Consortium secured \$1,000 from the NAAEE Guidelines for Excellence Grant opportunity to support a half-day cultural humility training for 15 PEEC students during the August 3-5, 2021 workshop. During the virtual training, participants engaged in group discussions, scenarios, and quizzes designed to present effective strategies to enhance culturally safe and inclusive learning environments.

**Results:** The 2020-2022 PEEC cohort is incorporating elements learned from the cultural humility training into their culminating capstone project that will be presented in August 2022.

### S.C. Sea Grant Consortium Expands Diversity, Equity, and Inclusion Requirements Within the Palmetto Environmental Education Certification Course

#### E.V. Bell, S.C. Sea Grant Consortium

**Recap:** S.C. Sea Grant Consortium expanded diversity, equity, and inclusion information and assignments throughout the Palmetto Environmental Education Certification two-year course.

**Relevance:** In 2018, the Consortium launched the Palmetto Environmental Education Certificate (PEEC) program, S.C.'s first environmental education certification program for educators. Based on 2019 U.S. Census Bureau data, 37.4% of S.C. identifies as a person of color; however, a lack of diversity persists within the careers of environmental sciences, education, and interpretation. The PEEC program continues to expand upon diversity, equity, and inclusion (DEI) information woven through the two-year course.

**Response:** DEI information was expanded and woven through the PEEC course requirements, including: Required reading and group discussion of *Black Faces, White Spaces Black Faces* by Carolyn Finney; completion of the "Equitable and Inclusive EE" module developed by the North American Association for Environmental Education; participation during the Cultural Humility virtual workshop; training and use of SMARTIE (specific, measurable, audience-focused, realistic, time-bound, inclusive, and equitable) objectives when developing final capstone project.

**Results:** The 2020-2022 PEEC cohort is incorporating DEI information and best practices into their culminating capstone project, five-year professional development plan, and personal reflection.

## **S.C. Sea Grant Consortium Launches New Professional Development Opportunity in Response to COVID-19 Pandemic**

### **E.V. Bell, S.C. Sea Grant Consortium**

**Recap:** To meet the shifting needs of educators during the COVID-19 pandemic, S.C. Sea Grant Consortium developed the new virtual professional development opportunity, All Booked Up Coastal Reading Club.

**Relevance:** In March 2020, S.C. public school districts, private schools, and nonformal institutions across the state closed and shifted to online learning platforms in response to the COVID-19 pandemic. For most educators, the abrupt switch from face-to-face instruction to online teaching resulted in numerous challenges, including locating quality online student resources, becoming adept using technologies for online learning, and meeting district and state requirements for maintaining teaching certificates (e.g., renewal credits).

**Response:** To meet virtual needs of educators, the Consortium developed the All Booked Up Coastal Reading Club as a means to learn about state and regional natural resources and environmental topics. The book club is influenced solely by members who determine reading selections, frequency and format of meetings, and group discussion topics. Previous book selections have included: *The Home Place* by Dr. Drew Lanham and *Fuzz: When Nature Breaks the Law* by Mary Roach. To encourage participation and retention of members, new members receive their first hard copy book for free and renewal credits are available.

**Results:** Since the launch of All Booked Up Coastal Reading Club in 2021, 29 educators representing 15 counties across the state have participated in the virtual book club meetings.

## **S.C. Sea Grant Consortium Provides Quarterly Diversity Staff Trainings**

### **E.V. Bell and Marlena Davis, S.C. Sea Grant Consortium**

**Recap:** The S.C. Sea Grant Consortium provided quarterly staff trainings on topics related to incorporating diversity, equity, and inclusion into agency-wide and program-specific projects.

**Relevance:** Increasing diversity among staff members, stakeholders, and end-users continues to challenge not only the S.C. Sea Grant Consortium but geosciences-based organizations across the country. Along with increasing

diversity, ensuring that programs, resources, and opportunities are equitable and inclusive adds important layers for consideration and implementation. Diversity statistics continue to be low among career geoscientists, and end users of scientific information for personal and community decision-making are often not reflective of the larger community.

**Response:** In June 2020, the Consortium initiated efforts to create an agency-wide diversity plan based on input from staff. Of interest to the majority of staff were diversity training opportunities for personal and professional growth. Using this feedback, four diversity staff trainings were scheduled: March 2021, Transformative Teaching Collective; June 2021: Cultural Humility; October 2021: USC Collaborative on Race; December 2021: Stages of Gullah.

**Results:** During the 2021, four quarterly diversity, equity and inclusion trainings were held for Consortium staff, during which more than 85% of staff attended.

## **S.C. Sea Grant Consortium Contributes to Salt Marsh Short Course**

### **E.V. Bell, S.C. Sea Grant Consortium**

**Recap:** The S.C. Sea Grant Consortium served as salt marsh content expert in the development of the Clemson University Salt Marsh Short Course.

**Relevance:** Salt marshes in S.C. face pressure from rising seas and increasing coastal populations. Living shoreline projects can mitigate impacts, revitalize degraded areas, and provide stewardship opportunities. In 2019, the Consortium, Clemson University, and the S.C. Aquarium partnered with the S.C. Department of Natural Resources on a National Oceanic and Atmospheric Administration-funded living shoreline project that engages Charleston-area community members in oyster and *Spartina alterniflora* restoration and supports the development of new resources.

**Response:** Clemson University coordinated the production of a Salt Marsh Short Course available free-of-charge to volunteers participating in restoration activities. The course features five modules, focus questions, and post-assessment on different topics, including oyster biology, ecosystem services, and stewardship opportunities. Specifically, the Consortium provided the scientific expertise, visuals, and voiceover for the module, Common Salt Marsh Flora and Fauna, which highlighted species frequently found in the low, middle, and high marsh zones of the salt marsh.

**Results:** Since the launch of the Clemson University Salt Marsh Short Course in the fall of 2021, 224 individuals have completed the course.

## **S.C. Sea Grant Consortium Engages More Than 100 Volunteers in Community Science Salt Marsh Restoration Project**

### **E.V. Bell, S.C. Sea Grant Consortium**

#### **Peter Kingsley-Smith, S.C. Department of Natural Resources**

**Recap:** The S.C. Sea Grant Consortium co-coordinated the engagement of more than 100 volunteers in salt marsh restoration activities at five locations throughout the Charleston watershed.

**Relevance:** Salt marshes in South Carolina face pressure from rising seas and increasing coastal populations. Living shoreline projects can mitigate impacts, revitalize degraded areas, and provide stewardship opportunities. In

2019, the Consortium, Clemson University, and the S.C. Aquarium partnered with the S.C. Department of Natural Resources (SCDNR) on a National Oceanic and Atmospheric Administration-funded living shoreline project that engages Charleston-area community members in oyster and *Spartina alterniflora* restoration and supports the development of new resources.

**Response:** The Consortium and SCDNR coordinated community volunteer events related to *Spartina alterniflora* cultivation, transplanting, and long-term monitoring at five locations within the Charleston watershed. These events included: virtual community meetings to introduce the living shoreline project and partners and recruit volunteers, *S. alterniflora* seed collection and planting, transplanting of mature *S. alterniflora* plants to designated restoration areas, and monitoring efforts documenting the establishment and growth of the transplanted plants.

**Results:** More 100 volunteers participated in 13 community events resulting in the planting of 35,758 *S. alterniflora* plants for a total of .47 acres of restored marsh.

## **S.C. Sea Grant Consortium Designs and Edits 47 Products to Support Mission**

**Susan Ferris Hill, E.V. Bell, Crystal Narayana, and Roger Drouin, S.C. Sea Grant Consortium**

**Recap:** The S.C. Sea Grant Consortium designed, edited and facilitated the development of 47 products in support of the agency programs and focus areas. Digital communications and news products as well as flyers, brochures, reports and guides were produced to support programs and projects conducted to Consortium staff, researchers and partners.

**Relevance:** As South Carolina's coastal population continues to grow and experiences the impact of climate change, there is a continuous need to build public awareness, understanding, and scientific literacy about the complexities of living, working, and playing in coastal South Carolina. The future of the conservation and management of coastal resources depends on a robust effort to foster stewardship and increase public awareness about the societal value and ecological function of South Carolina's coastal resources.

**Response:** S.C. Sea Grant Consortium's Communications and Education Team assisted with the development of 47 products to support extension, communications, and education programs.

**Results:** Digital and printed products included mini-websites, guides, reports, workshop flyers, brochures, newsletters, magazines, and curricula. Programs supported include S.C. Clean Marina, Beach Sweep/River Sweep, and Palmetto Environmental Education Certification, as well as products for programmatic areas including, nature-based tourism, sustainable development, water quality, weather and climate vulnerability and resilience, fisheries and aquaculture.

## **S.C. Sea Grant Consortium's Coastal Heritage Magazine Continues to Provide Information to 5,000 Print Subscribers**

**Roger Drouin, Susan Ferris Hill, Crystal Narayana, Susan Lovelace, Brita Jessen, EV Bell, and Susannah Sheldon, S.C. Sea Grant Consortium**

**Recap:** Two issues of *Coastal Heritage*, the Consortium's long-form issue-based publication, considered a Best Practice during the last federal evaluation, were produced and distributed to 5,000 subscribers and online readers. One was a special double-issue covering coastal challenges over the next 30 years and the other was a single-issue covering diamondback terrapins, the charismatic turtle endemic to the estuarine of the S.C. coast.

**Relevance:** *Coastal Heritage* has been published by the Consortium since 1982. Over time, the publication evolved from a four-page bulletin to a 16-page magazine. The publication was deemed a Best Practice by the Consortium's 2019 National Sea Grant Site Review Team. *Coastal Heritage* is part of the Consortium's strategy to increase scientific literacy and improve public understanding of South Carolina's coastal and marine environment, culture, and history.

**Response:** The Communications and Education Services staff, with editorial input from Management staff, continue to produce *Coastal Heritage*, the Consortium's long-form issue-based publication. Subscribers and website readers enjoy an in-depth look into South Carolina's coastal and marine science, history, and culture.

**Results:** Two issues were produced during FY21-22: a double-issue, "All Hands on Deck—Addressing Coastal Challenges of the Next 30 Years" and a 16-page issue, "Jewel of the Marsh—The Remarkable Diamondback Terrapin." *Coastal Heritage* is distributed to a list of 5,000 subscribers worldwide. Text and PDF versions are available on the Consortium's website at [www.scseagrant.org/coastal-heritage](http://www.scseagrant.org/coastal-heritage).

## **S.C. Sea Grant Consortium's *CoastalScience@Work* Enewsletter Provides Up-to-Date Information about Research and Information to Stakeholders**

**Susan Ferris Hill and E.V. Bell, S.C. Sea Grant Consortium**

**Recap:** The Consortium enewsletter, *CoastalScience@Work*, changed status to a monthly publication. Five issues were produced and delivered to 995 individual stakeholders. The average open rate was 38% and the average click-through rate was 12.5%, both of which are considerably higher than averages for all industries.

**Relevance:** There is a need to deliver timely, frequent, and effective communications to inform target audiences and the general public about the Consortium's science-based products, programs, and staff and institutional changes.

**Response:** To increase accountability and transparency with stakeholders, the Communications and Education Services staff moved the enewsletter publication to monthly status and produced and delivered *CoastalScience@Work* to 995 individuals through the platform Constant Contact. Email lists include the Board of Directors and alternates; Program Advisory Board; Extension and Education advisory committees; National Sea Grant Office; S.C. African American Heritage Commission members; S.C. General Assembly members; U.S. Congressional staff; Consortium staff; and the public.

**Results:** Five issues of *CoastalScience@Work* were produced and delivered during FY21-22. The average open rate was 38%, which is 20% higher than the average for all industries. The average click-through rate is 12.5%, which is 3.75% higher than the average click-through rate for all industries.

## **S.C. Sea Grant Consortium Produces Graphics That Inspire Participation**

**Crystal Narayana, S.C. Sea Grant Consortium**

**Recap:** The S.C. Sea Grant Consortium produced graphics and branded products to support programs and the agency's mission.

**Relevance:** Well designed and attractive products increase their use in educational settings and promote participating in programs. Branded designs enhance the reach of the S.C. Sea Grant Consortium and promote the brand as a source of science-based information that can be relied on.

**Response:** Communications staff worked with extension and communications staff and their partners to create logos and design promotional items including stickers and handouts for 11 products and designed 4 guides and reports as well as lesson plans, banners, social media tiles. Flyers include educational projects for the BioDiscovery program, Seed to Shoreline program, Healthy Pond Series, and Flooding 411.

**Results:** Publications designed include, *S.C. Clean Marina Guide*, *South Carolina Aquaculture Permitting Guide*, along with a toolkit, *The Economic Benefits of Beaches and Barrier Islands* and the *Town of Edisto Beach Flooding and Sea Level Rise Vulnerability Assessment*. Other projects included banners for the *Guide and Outfitter Recognized Professional* program, flags for the Clean Marina program, t-shirt for Beach Sweep/River Sweep program and logos that meet the recognition and educational needs of programs.

## S.C. Sea Grant Consortium Website Expands in Content and Access

**Susan Ferris Hill and Crystal Narayana, S.C. Sea Grant Consortium**

**Recap:** The S.C. Sea Grant Consortium added 37 news articles and over 53 content pages to the website ([www.scseagrant.org](http://www.scseagrant.org)), a source of science-based information for decision-makers and the public. In FY21-22, the website received 120,124 page views, a 38.24% increase from FY20-21.

**Relevance:** Decision-makers and the public should be informed about the coastal and marine environment and related community issues. The S.C. Sea Grant Consortium (Consortium) website continues to be a significant source of this information. The website provides information about Consortium-funded and partnered research, education, and outreach programs.

**Response:** The Communications staff maintains the Consortium's website ([www.scseagrant.org](http://www.scseagrant.org)) and updates the content regularly with input from staff and Consortium member institutions. Additions include news articles, research project updates, and information about extension and education projects. Information about projects are added as they are started with reports, data and other information added as they are produced. *Coastal Heritage*, a long-form issue based magazine, although a print product, is also formatted for on-line reading.

**Results:** The website received 120,124 page views, a 38.24% increase from FY20-21. The *Coastal Heritage* publications drew over 26,258 views with *Coastal Heritage—Carolina's Gold Coast: The Culture of Rice and Slavery* receiving the most at 13,740. Over 37 news articles and over 53 content pages to the website this reporting year.

## S.C. Sea Grant Consortium Develops Community-Engaged Internship Program

**Susan Lovelace, Susannah Sheldon, Matt Gorstein, and Brita Jessen, S.C. Sea Grant Consortium**

**Recap:** S.C. Sea Grant Consortium developed the Community-Engaged Internship Program to serve historically marginalized or underserved communities through a focus on environmental or resilience needs. Undergraduate students from these communities will be recruited for the part-time internships.

**Relevance:** Many coastal and marine science research organizations are challenged to include and foster more diversity in training the next generation of researchers, decision-makers, and Sea Grant staff. The S.C. Sea Grant Consortium recognizes the value of place-based work for undergraduate students of diverse backgrounds who have an interest in marine science and coastal community engagement.

**Response:** The Consortium developed draft documents for the program plan based on Community Engaged

Internships in the Sea Grant Network, association with Consortium members, and needs of our constituents. The plans were shared with undergraduate research and diversity offices at all nine of the Consortium member institutions for their review and edits, as well as with the Consortium's Program Advisory Board. Their feedback has been incorporated for announcement in Spring of 2022.

**Results:** The completed plan is in place for the first Community Engaged Internships (CEI) in the summer of 2022. Undergraduate students will engage in place-based research, extension, education, and/or communication that respects and integrates local ways of knowing. The students will engage with Consortium staff and enhance their experience through participation in all CEI professional development and training opportunities and in peer discussions with other participants in CEI across the country.

## **S.C. Sea Grant Consortium Develops Research Equity Toolkit for Consortium-funded Research Programs**

**Susan Lovelace, Brita Jessen, and Susannah Sheldon, S.C. Sea Grant Consortium**

**Recap:** S.C. Sea Grant Consortium developed a draft Research Equity Toolkit for piloting with the new omnibus research projects and current program development research projects. The toolkit helps researchers consider best practices for diversity, equity, and inclusion in their science programs and the communities in which they work. After incorporating feedback from researchers, the checklist will become a requirement for all future Consortium-funded research projects.

**Relevance:** Accurate and relevant coastal science depends on a foundation of community trust and inclusion to exchange information on coastal change impacts and solutions. Additionally, diversity within the field of marine science students and professionals is a continuing issue. A key need identified by the Consortium's Program Advisory Board in the development of its current Strategic Plan is to enhance diversity and inclusion in all areas of our work ("Planning Process for FY 18-21;" p. 7).

**Response:** The draft Research Equity Toolkit was developed to identify pathways for Consortium-funded researchers to enhance diversity, equity, and inclusion (DEI) opportunities while also avoiding potential harm for stakeholders. Beginning in 2022, research teams will work through the Toolkit with Consortium staff to evaluate how the methods and results of their research will serve diverse coastal communities, and how the research team (leaders, students, and staff) is structured and led to enhance DEI commitments.

**Results:** Four investigators have volunteered to pilot the checklist.

## **S.C. Sea Grant Consortium Develops Story Map Detailing Ongoing Research and Extension Projects**

**Emmi Palenbaum and Landon Knapp, S.C. Sea Grant Consortium**

**Recap:** The S.C. Sea Grant Consortium developed a [story map](#) to communicate the types and locations of ongoing research and extension projects the Consortium is leading or partnering on.

**Relevance:** With such a wide variety of topics, themes, partners, institutions, and geographies encompassed in the Consortium's portfolio, it is useful to communicate all of these complex interactions through a single comprehensible medium.

**Response:** The Consortium identified the opportunity to deliver information and summaries on various research, extension, and education projects across the state through the use of a story map. The story map is searchable by geography and by focus area, and highlights our collaborative partners on each project as well.

## **S.C. Sea Grant Consortium Assistant Director Gives Guest Lectures at Universities and K-12 Schools**

### **Matt Gorstein, S.C. Sea Grant Consortium**

**Recap:** S.C. Sea Grant Consortium Assistant Director for Development and Extension Matt Gorstein gave guest lectures on topics related to ecosystem service valuation, South Carolina's blue economy, and how economics and social science techniques can be used to answer environmental questions.

**Relevance:** In an era of climate change and frequently occurring coastal hazards, addressing complex environmental issues with interdisciplinary science has become increasingly important. This involves the marriage of socioeconomic research with existing natural science research, including a recognition of the need for sustainable uses of coastal and ocean resources to sustain important economic activity, and the further acknowledgement of ecosystem service values in coastal zone management decision making.

**Response:** Consortium Assistant Director for Development and Extension Matt Gorstein gave three guest lectures to a capstone environmental studies class and a marine policy class at the University of South Carolina and a science class at Porter-Gaud School. These guest lectures also served as an opportunity to share information on student fellowship and other funding opportunities, continue collaborating relationships with Consortium researchers, and reach a younger audience.

## **Partnership with Lowcountry Hazards Center Provides Training for S.C. Sea Grant Consortium Staff and Collaborators**

### **Landon Knapp, S.C. Sea Grant Consortium and Lowcountry Hazards Center, College of Charleston**

**Recap:** A partnership with the College of Charleston's Lowcountry Hazards Center provided key training to S.C. Sea Grant Consortium staff and collaborators.

**Relevance:** A Memorandum of Understanding was established between the S.C. Sea Grant Consortium and College of Charleston School of Sciences and Mathematics to coordinate the development and implementation of joint initiatives and resiliency programs.

**Response:** As part of the resource sharing established by the agreement, the College of Charleston's Lowcountry Hazards Center was made available for training and workshops needed by Consortium staff and by environmental professionals in the community.

**Results:** Four workshops were hosted at the Lowcountry Hazards Center during 2021. The S.C. Coastal Water Monitoring Network Portal Update Workshop provided 14 members of the water resources community guidance on the redevelopment of a key data resource. The two-day Extension Team Retreat included strategy sessions for Consortium staffers. A social media marketing class instructed seafood producers on communication strategy. A COVID-19 Emergency Meals-to-You Workshop shared knowledge on food system logistics during the COVID-19 Pandemic with K-12 administrators.

## S.C. Sea Grant Consortium Grows Social Media Platform Engagement

**Emmi Palenbaum and Susan Ferris Hill, S.C. Sea Grant Consortium**

**Recap:** The S.C. Sea Grant Consortium has recently increased posting on social media platforms, including Instagram, Facebook, and Twitter, to highlight Consortium-led events, research, educational programs, and more.

**Relevance:** Through increased consistency across social media platforms, the Consortium has increased traffic to the Consortium website and has significantly broadened audience following and engagement.

**Response:** The Consortium identified the opportunity to deliver science-based information and updates on projects, research, and opportunities through the use of social media platforms. In addition to creating an Instagram profile in 2021, the Consortium now maintains a regular content schedule on Facebook, Instagram, and Twitter.

**Result:** Over the past year, the social media platforms have grown awareness of Consortium projects, partnerships, and opportunities. Since June of 2021, the Consortium's Instagram profile has gained nearly 400 followers, while Twitter and Facebook have also attracted increased attention.

## S.C. Legislature Funds New Undergraduate Resilience Research for Students from Marginalized or Underserved Communities

**Susan Lovelace, S.C. Sea Grant Consortium**

**Recap:** The South Carolina legislature appropriated recurring funds of \$30,000 to be matched with \$20,000 in federal funds to create and support the Margaret A. Davidson Resilience Scholars Program for students from historically marginalized or underserved communities. The Consortium developed a plan with first Scholars applying in the fall of 2022.

**Relevance:** Resiliency in coastal communities is especially important in the Southeast U.S., as these communities face a multitude of stressors, including coastal storms, heavy precipitation, earthquakes, tidal flooding, sea level rise, and increasing pressures from population growth. Margaret A. Davidson was integral in the formation of the S.C. Sea Grant Consortium. Serving as the agency's executive director from 1983-1999, Davidson found that working outside the box ultimately resulted in more positive outcomes and effective change.

**Response:** The Consortium, seeking to expand opportunities for students from historically marginalized and underserved communities to participate in undergraduate research focused on resilience, developed draft documents for the program plan based on the needs of our research universities and constituents. The plans were shared with undergraduate research and diversity offices at all nine of the Consortium member institutions for their review and edits, as well as with the Consortium's Program Advisory Board.

**Results:** The Consortium developed the Margaret A. Davidson Resilience Scholars program to address questions important to enhancing resilient communities and economies. Each year up to six scholars from member institutions will be selected to conduct a semester research project with a faculty mentor. Scholars will also be given the opportunity to conduct a summer internship, either applying their research or selecting a different project.

## Francis Marion University Joins S.C. Sea Grant Consortium

**Susan Lovelace, S.C. Sea Grant Consortium**

**Recap:** In December 2021 the S.C. Sea Grant Consortium Board of Directors voted to accept the application of Francis Marion University into the Consortium, bringing the total to nine members.

**Relevance:** The S.C. Sea Grant Consortium was created as an independent state agency in 1978 through Act No. 643, S.C. Code of Laws. The membership of the Consortium consisted of The Citadel, the College of Charleston, Clemson University, the Medical University of S.C., S.C. State College, the University of South Carolina, and the S.C. Department of Natural Resources as charter members. Coastal Carolina University was added by a majority vote of the board in 1996.

**Response:** On Sept. 24, 2021 Francis Marion University (FMU) President Luther Carter requested membership in the Consortium. Executive Director Susan Lovelace and Partnerships Lead Brita Jessen traveled to FMU to meet with the president, provost, and faculty. Lovelace provided a written summary of FMU's program consistency with the Consortium's strategic plan to board chair, Clemson University Provost Robert Jones.

**Results:** During the Board of Directors annual meeting Nov. 29, 2021, the board voted to accept Francis Marion University into the Consortium, bringing the total membership to nine. Member institutions are eligible for research funding and partnership opportunities, graduate and undergraduate fellowships, and access to staff for engagement and communications consultancy.

## **S.C. Sea Grant Consortium Evaluates Effectiveness of Outreach Program in Increasing Awareness of Marine, Climate Science**

### **Michael Childress, Clemson University**

**Recap:** S.C. Sea Grant researchers' evaluation of a musical theater and science outreach program demonstrated increased interest in STEM careers among elementary school students and significant gains in marine science knowledge and confidence in their ability to convey these concepts for university students.

**Relevance:** Humans are connected to the ocean in many ways, including relying on resources from the ocean but also influencing the oceans through their actions. Ocean literacy is essential in empowering individuals to make informed and responsible decisions related to marine resources and ocean sustainability, but is rarely taught in inland schools. Also, many children in upstate South Carolina have never been to the coast. Researchers assessed impacts using pre- and post-event surveys.

**Response:** Clemson University researchers teamed with Educational Entertainment to present a musical theater and science outreach program called "Something Very Fishy" to K-5 students in the Upstate. Student docents, trained by the S.C. Aquarium to present science lesson plans for elementary classrooms, continued to work with elementary school through virtual dives and live-animal interactions. This second year of the program was conducted primarily online, with a return to in-person interactions at the end of the year.

**Results:** Students showed increased interest in STEM careers, especially those careers portrayed by the university student docents. Increased interest in arts careers and correlations between arts career interests and use of educational resources provided in our workbook was highest in third grade. University docent students showed significant gains in marine science content knowledge after participating in the program. They also increased in their self-evaluation of teaching ability, technology use, and understanding of climate change concepts.

## S.C. Sea Grant Consortium Efforts Encourage Youths to be Ambassadors of Community Hurricane Resilience

**Merrie Koester, University of South Carolina**

**Recap:** Consortium researchers developed and enhanced several projects in Title 1 schools aimed at educating students and communities of the risks of sea level rise in their communities.

**Relevance:** Studies on hazard risk communication reveal that unless messaging is consistent with the beliefs, needs, and goals of a given social group, it is not likely to be acted upon. This is as true in a pandemic as it is during hurricane season. With few exceptions, minority communities are at greater risk in disaster situations, while community-based organizations that serve and represent these minority communities are not well-linked with community-wide disaster loss reduction and preparedness efforts.

**Response:** A South Carolina Sea Grant Consortium researcher expanded upon the Kids Teaching Flood Resilience program (<https://www.kidsteachingfloodresilience.com/>), developed in response to a key challenge noted in the City of Charleston's 2015 Sea Level Rise Strategy Plan, to better communicate and inform citizens about direct local impacts of sea level rise as a way to enhance public safety.

**Results:** Among the results were: the Blue Line Project ([www.circularchurch.org/bluelineproject](http://www.circularchurch.org/bluelineproject)) emphasizing the disproportionate impacts of storm surge on historically marginalized communities; premier of the film "Never Say WHATEVER, Especially in a Hurricane" ([www.youtube.com/watch?v=LFOGwzPfTrk](http://www.youtube.com/watch?v=LFOGwzPfTrk)), which addresses hurricane illiteracy; field testing by three high school teachers of Flood Resilience Fridays; and providing each student at a Title 1 school with copies of the book "Us and the Creek," which science teachers used to create a saltmarsh science and appreciation program.

## S.C. Sea Grant Consortium Fosters Student Support Through Internships, Fellowships, and Research Opportunities

**Susannah Sheldon, Susan Lovelace, Matt Gorstein, and Brita Jessen, S.C. Sea Grant Consortium**

**Recap:** The Consortium continues to substantially contribute to workforce development through internships, fellowships, and research opportunities.

**Relevance:** Supporting undergraduate and graduate students and early career professionals leads to an informed, engaged, and well-trained workforce.

**Response:** The S.C. Sea Grant Consortium is involved in several initiatives that support education and professional development for these individuals. Sixty-one Knauss fellows have been selected from South Carolina since 1984, and 20 Coastal Management fellows from South Carolina have been placed with various state agencies nationally since 1997. In addition, the Consortium partners with the S.C. Space Grant Consortium to support the annual Kathryn D. Sullivan Earth and Marine Science Fellowship, designed to increase the number of highly trained earth and marine scientists and to enable graduate students to conduct NASA- and NOAA-related Earth/marine science research. Additionally, three undergraduate opportunities are in development for implementation in the next reporting year.

**Results:** In 2021, S.C. Sea Grant supported 18 undergraduates, 21 master's-level students, and 3 Ph.D. students in conjunction with Consortium-funded research, projects, and fellowships. Of these, 31 were new to Sea Grant

support and 11 were continuing to receive support. Five of the graduate students was a Sea Grant extension intern for the Consortium. Two Sea Grant-nominated students were selected for the Knauss fellowship and one for the Sullivan award. Sea Grant student support has improved ocean and coastal literacy among university students and early professionals and encouraged their success in securing coastal and marine-related employment.