CERF's Up!

Volume 51 • Number 3 • September 2025

Transitioning into Retirement—the CoastWise Partners Experience

CERF in Action: Conflicts Between Seagrass and Clam Aquaculture

Riding the Wave to CERF 2025

A new wave of information from the Coastal and Estuarine Research Federation

CERF's Up!

Volume 51 • Number 3 • September 2025

Table of Contents

Cover Art: CERF 2025 conference artwork by Jason Ford.
Learn more at https://conference.cerf.science/conference-artist-artwork

Call for Cover Photos for *CERF's Up!*

Would you like to see your favorite estuary displayed on the cover of *CERF's Up!*? If so, send high-resolution shots showing the place's natural beauty, along with a short caption and photo credit, to bulletin@cerf.science.

President's Message

1987 to 2025: 48 Years as CERF Member

Linda Blum
CERF President

My first thought for the topic of my last *CERF's Up!* President's message was to focus on CERF 2025 in Richmond, Virginia, 9-13 November 2025. To focus on the upcoming conference made sense, but I started to reflect on what the Atlantic Estuarine Research Society (AERS) and (C)ERF have meant to me, which resulted in a change of course for this message.

Over the course of my professional career, my research focus changed from forest soil microbiology to microbial ecology in agricultural soils, freshwater streams, and next in estuaries, and finally to plant-microbe-soil interactions in salt marshes. As my research focus changed, so did my primary professional society associations and the conferences that I attended. Along the way, I have been very fortunate to work with some outstanding scientists and resource managers, but it wasn't until I attended my first AERS meeting that I finally felt like I'd found a professional home. The AERS members were smart, serious about their work, amazing mentors and colleagues, and just plain fun to spend time with – they took their work seriously but took themselves lightly. Those positive interactions with AERS members, especially those whose work was at the forefront of estuarine science at the time, were the impetus for me to attend the 1987 biennial conference of what was then the Estuarine Research Federation (ERF) in New Orleans.

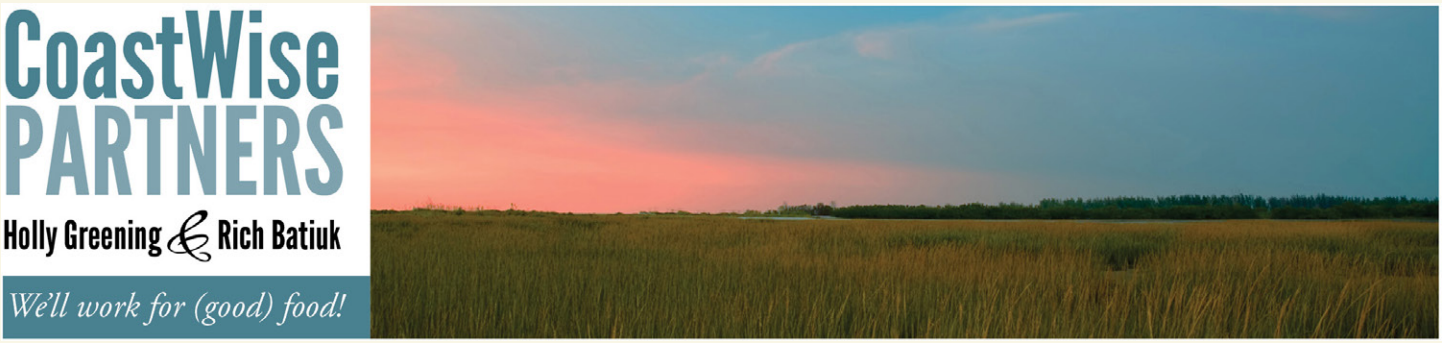
What a relief to find that many of the people who were AERS members were also ERF members, AND that the atmosphere of the much larger ERF conference was like that at smaller AERS meetings. While the ERF 1987 conference was intense and exciting, it was also fun. The conference brought together academic and non-academic professionals and students to discuss current practices and exchange knowledge about estuarine science and management. The presentations provided a preview of the work that would appear in the journal *Estuaries* within a year or two. Networking with other researchers, managers, and policymakers was an opportunity to discuss ideas beyond those in current journal articles, learn about new funding initiatives, develop collaborations with folks studying other types of estuaries, and receive constructive input on my own work. What ERF 1987 offered was not the cold, aggressive, exclusive atmosphere of the professional society conferences that I had attended previously. I came away from ERF 1987 with lots of new ideas, a clear understanding of how important one-on-one interactions with colleagues from a variety of career paths at professional meetings can be, several new contacts who became collaborators and friends, a better understanding of my own professional identity, and no clue about how active I would become in (C)ERF in the future.

It was never my aspiration to become (C)ERF president. What a pleasant surprise it was when it happened. Rather than an intentional goal, it was a consequence of regular attendance at (C)ERF and AERS meetings that led to opportunities to give back to these societies. First, it was to organize an AERS meeting, then to serve on a committee, and run for office. Next was the opportunity to represent AERS on the ERF Governing Board, serve on ERF committees, represent ERF at an Estuarine and Coastal Sciences Association meeting in Australia, organize ERF 2005, run for CERF Governing Board Secretary (and the second time actually win the election), and assist with planning for many CERF conferences. And, finally, to run for CERF President. Each opportunity to serve (C)ERF (and AERS) came with lots of benefits, especially improving leadership skills that translated to an academic setting or other volunteer organizations. Additional benefits were personal lessons in time management, strategic thinking, and cultural sensitivity.

Professional membership in (C)ERF and AERS and volunteering when opportunities arose were powerful tools for personal growth and change. It was also a way to give back to two organizations that provided the foundation for my career. While I have retired from active fieldwork and teaching, my fascination with salt marshes and my commitment to CERF (AERS and all the other affiliates, too!) remains as strong as ever. Thus, it is fitting that I will end my CERF presidency with the professional society where the most enriching part of my professional life began. Thank you to each of you for your contributions to CERF and for making it a place that has been my professional home for 48 years. See you at CERF 2025 and in Puerto Rico in 2027!

Transitioning into Retirement—the CoastWise Partners Experience

Holly Greening[1] and Rich Batiuk[2]
[1] Tampa Bay Estuary Partnership, Retired, Grand Junction, Colorado, USA
[2] US Environmental Protection Agency Chesapeake Bay Program Office, Retired, Annapolis, Maryland, USA
hollysgreening@gmail.com



Following successful multi-decadal careers and facing unscheduled days (without multiple meetings, conference calls, Zoom meetings, 10-12 hour days traveling, conferences, seminars, training, personnel reviews, interacting with talented and passionate colleagues, and making significant progress towards shared goals), how do you make the transition to retirement enjoyable, meaningful, and successful? For us, two colleagues who had known and worked with each other for decades, with homebases in Tampa Bay and Chesapeake Bay, respectively, the answer became "CoastWise Partners." We found a solution that met our transition needs and enabled us to continue to contribute to the things we truly enjoyed about participating in estuarine science and management while helping others at the same time.

What We Offered

In advance, we identified areas of expertise and experience which we would enjoy offering to coastal science and management programs.

• *Help with developing and implementing collaborative watershed management strategies* by providing recommendations for developing meaningful, measurable, and achievable restoration goals and objectives; technical advice in establishing numeric nutrient criteria and nutrient loading targets for estuarine and coastal waters; and advice in building the scientific, technical, programmatic, and political foundations needed to implement comprehensive, effective pollutant load management programs.

• *Advice framing comprehensive science and management plans* by helping engaged partners to craft or update a plan that reflects their community priorities, sets realistic goals, and meets institutional requirements.

• *Provide our experience as estuarine scientists/watershed managers to participate in workshops or conferences* by offering to facilitate and/or participate in technical workshops and stakeholder consensus-building meetings.

• *Provide experienced assistance with watershed program governance, management, or scientific approaches* by helping to summarize and synthesize scientific findings and apply them to collaborative resources management programs; assist in the design of cost-effective large-scale and long-term monitoring networks; assist in the selection and applications of environmental models to support management decisions; and review draft scientific manuscripts, technical papers, or requests for proposals (RFPs).

Unique Business Plan

First and foremost, we adopted a business plan captured in five simple words: "We work for (good) food." That was it! No need for a Harvard Business School MBA degree. No hundred-page business plan, estimating initial capital costs, determining indirect cost rates, deciding whether we would adopt business attire or business casual. Ok, we did eventually agree to one change, we would only work for GREAT food, after sampling incredible cuisine in San Juan, Puerto Rico, and at seafood restaurants in Portland, Maine, and at Long Island Sound waterfronts.

How We Worked

Second, the secret sauce… keeping with the food-focused theme. Our approach was based on a very simple recipe which worked effectively regardless of the size or complexity of the partnerships or organizations—listen, understand, and share, then facilitate discussions toward decisions using what we learned as the basis for discussion.

• *Listen* – We scheduled and hosted one-on-one conversations with an array of engaged partners and

stakeholders working from a common set of questions or discussion topics, but allowed the conversation to evolve based on the partner or stakeholder we were speaking with. We spent a lot of time up-front understanding what each of the partners viewed as strengths and weaknesses of the programs they were charged with guiding.

• *Understand* – We invested time to organize what was learned through the one-on-one conversations. Areas of agreement and of differences were synthesized using the stated goals and desired outcomes of the client's organization. Names and affiliations were kept confidential to protect the identities of the individuals providing feedback.

• *Share* – We aligned what was synthesized with our collective experiences of those characteristics and qualities of the most effective partnership-based, collaborative restoration efforts, relying on examples drawn from a wide variety of successful partnerships. However, we refrained from suggesting specific actions, instead encouraging the partners to draw their own conclusions and make decisions from these conclusions.

Keeping It Fun

Third, we established several ironclad operating principles up front and adhered to them for what ended up being almost seven years of retirement consulting.

• We would only work with partnerships, organizations, agencies, and institutions who demonstrated a clear desire to learn from others and change in order to be more effective in achieving their goals or shared mission.

• We were not paid consultants and would not compete for work with others working in that arena.

• The deliverables from our work would be simple and straightforward—short briefing papers, illustrative presentations, concise (often bulleted) summaries from our conversations with multiple partners and stakeholders—never any long reports or detailed planning documents.

• And last, but most important, we wanted to have fun and take pleasure in sharing our combined 70+ years of experience working with watershed, estuarine, and coastal ecosystem restoration-based partnerships from across the US and around the world.

We selected who we worked with and agreed to scopes of work in advance which adhered to all the above conditions. If not, we politely thanked them for their interest and focused on working with others who met our operating principles.

Establishing a Retirement Consulting Partnership

Setting up and maintaining our retirement consulting partnership was a straightforward process with the limited number of components listed below.

• Registering our partnership as a Limited Liability Corporation or LLC with the State of Florida (where Holly lived) which required minimal paperwork and a small fee.

• Developing simple bylaws for the LLC.

• Procuring insurance policies covering general business liability and professional liability (given the need to enter into contracts to cover travel and business-related expenses, such contracts require liability coverage).

• Opening a joint business checking account with a bank which had branches in both Florida and Maryland (our respective home states).

• Working with an accomplished editor and graphics designer to develop our business cards, flyer, and letterhead.

• Developing a two-page flyer describing CoastWise Partners and the services offered, only requesting reimbursement for travel and business expenses.

• Filing annual LLC reporting and tax documents.

Marketing CoastWise Partners

From the start, we strictly operated by word of mouth (and by email). With no website and no publicity beyond our two-page flyer, we sent out email messages to 26 directors of the National Estuary Programs and to a similar number of other colleagues leading watershed, estuarine, and coastal-based restoration programs and partnerships across the US. That simple set of early communications led us to seven years' worth of consulting experiences with a diverse array of colleagues across all three coastlines, the Great Lakes, and multiple countries around the world.

Some Example Success Stories

By the time we closed out CoastWise Partners in December 2024, our two-page flyer had expanded to four pages to include the 80 different partnerships, organizations, agencies, and institutions we worked with, whether it was for a day or through a two-year contract. The following are examples of what we felt are success stories in helping colleagues understand and benefit from the potential which was already within their partners and their partnerships.

• *Auckland Council, New Zealand, and Water New Zealand:* Worked with national, regional, and local governments to share lessons learned from the Chesapeake Bay Program partnership's decades of experiences with collaborative decision making.

• *Casco Bay Estuary Program, Maine:* Guided the Estuary Program's partnership leadership and program office staff through their development of shared partnership priorities for the next five years.

• *Florida Institute of Oceanography RESTORE Act Centers of Excellence:* Worked with the Program Management Team on the collaborative

development of their strategic plan to help guide future RESTORE funding.

• *Fox-Wolf Watershed Alliance, Green Bay, Wisconsin:* Facilitated discussions and encouraged shared decision-making among partners from state, regional, and local governments; universities; and non-profit organizations along with representatives from the local and regional agricultural communities to reach agreement on a new governance system for their watershed-based partnership.

• *Long Island Sound Study, New York and Connecticut*: Helped plan and facilitate meetings of the federal, state, regional, and local partnership leaders to reach agreement on the priorities and goals for their next Comprehensive Conservation and Management Plan.

• *Peconic Estuary Program, New York:* Facilitated and supported a two-year effort to develop a comprehensive monitoring network and revise the organizational structure and operations of the partnership.

• *San Juan Estuary Program, Puerto Rico:* Over a two-year period, worked closely with the Estuary Program's senior leadership, their staff, and local partners and stakeholders to re-evaluate the roles and responsibilities of the partnership and how it could be positioned to be more effective in helping make measurable progress toward their stated restoration goals.

In Closing

We both found our work through CoastWise Partners to be a perfect transition from two fulfilling multi-decadal careers into retirement. The opportunity to share our combined experiences and help others facing similar challenges was exciting, challenging, and very rewarding. With few exceptions, our clients felt our participation made a beneficial difference in how they worked together to obtain their goals. After almost seven years, having more than accomplished our own personal goals and motivations for undertaking our retirement consulting, we closed out CoastWise Partners.

Our experience is just one example of many options CERF members and colleagues may want to consider as they transition to retirement. Other examples and options were explored by participants in the CERF 2019 Conference workshop *Engaging in Coastal Science after Retirement: Brainstorming Options and Opportunities.* The CERF Governing Board will be considering recommendations from the workshop later this year.

Our Story

Upon retiring from exciting and successful careers as estuarine scientists and program directors in Tampa and Chesapeake bays, CoastWise Partners co-founders Holly Greening and Rich Batiuk realized that we were not yet ready to completely hang up our coastal and watershed management hats. Many of our colleagues encouraged us to consider providing advice and consultation based on our collective 70+ years of experience in coastal science and management. However, we wanted to provide something different from the typical environmental consulting business model.

We founded CoastWise Partners in 2018, with the concept that we will provide our time and expertise *pro-bono* and request that only our travel and business expenses be covered by entities requesting our assistance. We have found this business model to be very rewarding—we both were looking for opportunities to give back to the coastal science and management communities that have been so supportive of our careers over the years, and we love travel and good food. Our byline, "we'll work for (good) food," says it all.

Holly Greening was both Executive Director and Senior Scientist of the Tampa Bay Estuary Program (TBEP). Holly served on the Estuarine Research Federation Governing Board, the National Academy of Sciences Ocean Studies Board, and four National Research Council committees. As TBEP's Executive Director, she facilitated the development of Tampa Bay's successful nutrient management and seagrass recovery strategy. In February 2018, upon retiring from TBEP after 27 years, Holly co-founded CoastWise Partners to provide volunteer assistance to coastal and watershed programs nationwide and internationally.

Rich Batiuk spent more than three decades with the US Environmental Protection Agency (EPA) and the Chesapeake Bay Program partnership, where he led the integration of science into multi-partner collaborative decision-making as the Associate Director for Science, Analysis, and Implementation. He was the principal architect of the Chesapeake Bay Total Maximum Daily Load (TMDL), a groundbreaking pollutant accountability system spanning six states and the District of Columbia. Rich has led the development and expansion of one of the world's most comprehensive estuarine and watershed monitoring networks, designed to assess an array of water quality standards, environmental indicators, and outcomes directly linked to collaborative decision making and implementation of management actions. Upon retiring from the EPA in July 2018, Rich joined Holly Greening as co-founder of CoastWise Partners.

Bottom-Use Conflicts? Unearthing Spatial Use Trends Between Hard Clam Culture and Restored Seagrass

Grace Breitenbeck, Batten School of Coastal & Marine Sciences and Virginia Institute of Marine Science, William & Mary, Gloucester Point, Virginia, USA
gbreitenbeck@vims.edu

Coastal zone management has become increasingly complicated as more people use coastal areas for recreation, development, and industry. For my thesis, we used two decades of spatial and environmental data to model the potential overlap between restored seagrass and hard clam aquaculture on the Virginia seaside. These two economically and ecologically valuable bottom uses are managed as mutually exclusive, leading to a potential bottom-use conflict due to their similar habitat preferences. Our models predicted the potential for significant expansion of both seagrass and clam aquaculture with relatively minor spatial overlap in their predicted distributions in this system. These results can help resource managers make informed decisions to maximize socio-economic and ecological benefits. Read more here: https://rdcu.be/ezzNr!

Conducting fieldwork exploring seagrass-bivalve interactions Photo: Grace Breitenbeck

*A wild hard clam (*Mercenaria mercenaria*) found in the field*
Photo: Grace Breitenbeck

UPCOMING EVENTS

2025 October Webinar: How to Effectively Communicate Your Science at CERF 2025
21 October 2025
Virtual Via Zoom
https://www.cerf.science/webinars

CERF 2025 Conference
9–13 November 2025
Richmond, Virginia
https://conference.cerf.science/

In Memoriam: Michael S. Connor

Anne E. Giblin
The Ecosystems Center, Marine Biological Laboratory, Woods Hole, Massachusetts, USA
agiblin@mbl.edu

The community lost a tireless advocate for using science to improve coastal urban water management: Michael Connor, 73, passed away at his home in Port Townsend, Washington, on 10 June 2025, surrounded by family and friends.

Connor graduated from Stanford University with a BS and received a PhD in Biological Oceanography from the joint Woods Hole Oceanographic Institution–MIT program in 1980. He then did postdoctoral fellowships with the National Science Foundation and at the Harvard School of Public Health. His unusual combination of marine science and environmental health policy set him on a 40-year career working at the intersection of management and policy at every level, from local to international, and in organizations that ranged from non-profits to local, state, and federal agencies.

In 1982, Connor became a National Estuary Program Coordinator for the US Environmental Protection Agency, where he worked to develop management plans for Long Island Sound, Narragansett Bay, and Buzzards Bay. He followed that with a stint at Battelle Ocean Sciences developing estuarine cleanup programs nationwide. In 1987, he took a position as the first Department Manager of Environmental Quality at the Massachusetts Water Resources Authority (MWRA). MWRA was faced with a multibillion-dollar cleanup of Boston Harbor amid widespread concerns that the outfall relocation would damage fisheries and potentially harm right whales. In response, Connor led the development of a US$3 million monitoring program designed to track the impact of the project and address public concerns. Connor also played a huge role in helping translate science into policy options for the board. The project met all its goals, and the monitoring program he was instrumental in establishing is still viewed as a model.

In 1998, Connor moved to the New England Aquarium, where he was Vice President of Programs and Exhibits. Under his leadership, the Aquarium increased grant funding and opened four new exhibits. He was proud that he was able to better integrate programs and exhibits from the Aquarium's various groups, including research, conservation, education, design, and husbandry.

Connor left the East Coast in 2002 to become the Executive Director of the San Francisco Estuaries Institute (SFEI), which aimed to foster the scientific understanding needed to better manage San Francisco Bay. SFEI's financial stability, public visibility, and scientific publication rates all increased under his leadership. After six years, Connor sought the challenge of implementing solutions and became the General Manager for the East Bay Dischargers Authority in 2008. This agency coordinated the wastewater treatment and discharge into San Francisco Bay from nearly a million residents. With growing concern over the eutrophication of the Bay, Connor saw an opportunity to move toward water and nutrient recovery rather than just water treatment and disposal. The agency developed the Oro Loma Horizontal Levee, which captured water and nutrients and helped restore wetlands. Connor later shared a Bay Hero Award for this green engineering strategy.

In addition to the work Connor did in the US, he also worked internationally. As a Fulbright specialist, he worked in both Myanmar and Mauritius and served as an advisor to agencies in Japan, Korea, and Hong Kong.

Connor will be remembered for his analytical approach to problems, his insistence on data, his tenacity in seeking solutions, and his probing questions. He will also be remembered as an excellent mentor, an insightful colleague, and as a caring and witty boss and friend. He loved the environment and was an avid hiker, kayaker, and skiing enthusiast. He accomplished a great deal, and he will be greatly missed by friends and colleagues all over the world.

Q&A With the CERF Conference Co-Chairs

Cassondra Armstrong

Treda Grayson

Frank Reilly

The 28th Biennial CERF Conference has been led by the dynamic trio of Cassondra Armstrong (Applied Sciences Bureau Chief, South Florida Water Management District), Treda Grayson (Branch Supervisor, US Environmental Protection Agency Office of Water), and Frank Reilly (Senior Consultant, Environmental Planning and Sustainability, LMI Solutions). With CERF 2025 fast approaching, we asked them some questions about the conference, and here are their responses:

Q: What are you most looking forward to at the conference?

Cassondra Armstrong (CA): Catching up with friends and colleagues, seeing great presentations, and showing off my hometown to the CERF community.

Treda Grayson (TG): Ditto, plus seeing two years of work come together in the form of a successful conference!

Frank Reilly (FR): CERF is a premier conference due to its inherently interdisciplinary approach. So many other scientific conferences are stove piped, but CERF by its very nature fosters cross disciplinary thinking. I have never returned from a CERF meeting without a sense of invigoration and a new outlook on something.

Q: What has been your favorite part of the planning process?

CA: Getting to know all the volunteers better and seeing how dedicated they are to making this a great conference.

TG: My favorite part has been working with Cassondra, Frank, and the entire planning team. This group is amazing, and I am so proud to be a part of curating what I know will be an enjoyable experience for conference attendees.

FR: My favorite aspect of planning has been getting to know so many different professionals with ideas far different than mine.

Q: What advice would you offer to first-time attendees?

CA: Relax and pace yourself, there's lots to see and do. Take advantage of services being offered to first timers to help you settle in and get oriented.

TG: First, realize that you will not nd cannot do it all! Second, find a buddy and have fun in between all the intellectual stimulation. CERFers are a friendly bunch, and you are bound to walk away with a new friend, research idea, or potential solution to a question you've been trying to solve through conversations throughout the conference.

FR: CERF was an early career influence for me… that has never ended. The nurturing and open feeling of a CERF meeting is unique. If it were my first, I would find my heroes, walk up to them, walk up to anybody I saw and talk. The contacts made at CERF can last a lifetime and truly change your career trajectory.

Q: Why, in your opinion, is this conference so important for the coastal and estuarine science and management community?

CA: You can get so much interdisciplinary information and interaction in a concentrated space. Professional networking, collaboration, and career development opportunities are phenomenal. As someone with one foot in research and one foot in management, I feel the CERF conference provides a space for pure research to meet real world applications that leads to innovative solutions to help us address issues faced by coastal communities.

TG: This conference is important to the coastal and estuarine science and management community because it is THE place where academicians, researchers, practitioners, and managers of all career stages convene to engage, share, and collaborate in our discipline. I leave each and every conference with new perspectives on ways to address the environmental challenges we face.

FR: Policy makers and their agents and staff use CERF meetings and their outputs to help inform themselves of critical issues in the coastal and estuarine zone. I've met Library of Congress, US Senate, government agency, and gubernatorial staffers at CERF meetings trying to use the interdisciplinary aspect of CERF as one-stop shopping for the latest information and trends.

Keynote Address

Carlos Duarte

Blue Natural Capital Is the New Real State: A Business Case for Investing in Our Estuaries' Blue Natural Capital

Keynote speaker Dr. Carlos Duarte will explain how the concept of blue carbon, an asset widespread in estuaries and coasts, represents the first time that a marine ecosystem service is monetized and invested in financial markets, breaking through the extractive relationship of most nations with the ocean. However, blue carbon is just an intermediate station toward developing blue natural capital as a new, investable asset class that rebuilds our oceans while addressing some of the present challenges of our times. Duarte will elaborate on the state of this topic and the pending hurdles that remain to realize this new approach that breaks away from the tragedy of the commons responsible for the decline of our estuaries and coasts.

Biography

Carlos M. Duarte is the Ibn Sina Distinguished Professor of Marine Science and the Tarek Ahmed Juffali Research Chair in Red Sea Ecology at the King Abdullah University of Science and Technology (KAUST) in Saudi Arabia. He is also the Executive Director of the Global Coral R&D Accelerator Platform, and Chief Scientist of Oceans2050, The Wave, Ocean us, E1Series, and Blue Green Futures. Before this, he was Director of the Oceans Institute at the University of Western Australia and held positions in Spain, Norway, and Denmark. Duarte's research focuses on the effects of global change in marine ecosystems and developing nature-based solutions to global challenges, including climate change, and evidence-based strategies to rebuild the abundance of marine life by 2050.

Building on his research showing mangroves, seagrasses, and salt marshes to be globally relevant carbon sinks, he developed, working with different UN agencies, the concept of blue carbon as a nature-based solution to climate change. He has conducted research across all continents and oceans, organisms, and ecosystem types. Duarte has published more than 1,000 scientific papers and has been ranked as the top marine biologist and the 12th most influential climate scientist in the world (Reuters). Duarte was coeditor in chief of *Estuaries*, later *Estuaries and Coasts*, and an ex officio CERF board member while holding that role.

Early Career Networking Event

The Early Career Networking Event will take place Monday, 10 November, 10:00–11:30 AM. The event provides a space for students and those early in their careers to converse with one another and with folks who are already established in their careers. Attendees will be able to meet a variety of professionals spanning four broad career paths:

1) Non-governmental organizations (NGOs) and non-profits
2) Academia
3) Private industry/Consulting
4) Government (federal, state, and local)

The event space will be delineated into the four career paths mentioned above and attendees will be able to spend as much time as they would like in any of the sections. In each section, there will be multiple panelists (established career folks) stationed so that attendees can learn more about their positions and career paths.

Students and early career professionals: Please indicate on the CERF registration form if you plan to attend this event. Be sure to prepare questions!

Established career folks: Are you a government, academic, non-profit, or consulting professional interested in sharing your career advice with the next generation of scientists? Or is your employer looking to hire coastal and estuarine scientists? If so, sign up to be a panelist during registration, or by emailing cerfcareernetworkingevent@gmail.com directly. We appreciate all professional volunteers, but if you are actively hiring or seeking graduate students or post-docs at the time of the event, we strongly encourage you to consider volunteering as a panelist. This would provide a valuable opportunity for students and early career professionals to connect directly with those who are hiring.

CERF 2025 Navigators Program

Do you want to give back to CERF by becoming a CERF Navigator?

A CERF Navigator is a conference attendee committed to making CERF a safe, professional, and inclusive event who helps ensure that all participants feel welcomed, included, and respected. CERF Navigators are members at all career stages who volunteer to participate and will be available throughout the conference to chat informally, provide guidance, suggestions, and help increase engagement among attendees. Navigators also play a crucial role in ensuring accessibility to all aspects of the conference and fostering a genuine sense of belonging for every participant.

Navigators will be on hand by registration and at the CERF booth. As part of our commitment to creating a supportive environment, CERF Navigators have the opportunity to receive active bystander intervention training and information about accessibility and inclusivity plans before the conference. While this training is not mandatory to serve as a CERF Navigator, we offer it as a valuable resource to help support the mission of the CERF Navigator program. The training is available to the first 30 people who sign up, and it provides additional tools and strategies for creating a safe and welcoming conference environment.

If you would like to be considered for a CERF Navigator, mark "Yes" when asked in the conference registration form or if you've already registered, complete this Google Form.[1]

Program leadership will contact all volunteers with additional information and possible training opportunities in early fall.

1. https://bit.ly/CERF2025Navigators

*A semipalmated plover (*Charadrius semipalmatus*) wades and forages in a panne within the salt marshes near Rough Meadows Wildlife Sanctuary in Rowley, Massachusetts, USA*

Photo: Karen Aerni

Schedule-at-a-Glance

8 Nov. | Saturday

TIME	EVENT	LOCATION
4:00 PM-7:00 PM	Registration Open	GRCC*

9 Nov. | Sunday

Various	Field Trips	Offsite
Various	Workshops	GRCC
7:00 AM-5:00 PM	Registration Open	GRCC
11:00 AM-12:00 PM	Student Worker Orientation and Training	GRCC
5:00 PM-5:45 PM	First-Time Attendee Orientation	GRCC
6:00 PM-8:00 PM	Keynote Address and Awards Ceremony	GRCC
8:00 PM-10:00 PM	President's Welcome Reception with Exhibitors	GRCC

10 Nov. | Monday

7:00 AM-5:00 PM	Registration Open	GRCC
8:00 AM-9:30 PM	Early Morning Sessions (Session 1)	GRCC
9:30 AM-10:00 AM	Break	GRCC
10:00 AM-11:30 AM	Collab Sessions (Session A)	GRCC
10:00 AM-11:30 AM	Early Career Networking Event	GRCC
11:30 AM-1:00 PM	Lunch on your own	Various Locations
1:00 PM-2:30 PM	Early Afternoon Sessions (Session 2)	GRCC
2:30 PM-3:00 PM	Break	GRCC
3:00 PM-4:30 PM	Plenary Session 1: Science for Solutions: By Whom and For Whom?	GRCC
4:30 PM-7:00 PM	Poster Session 1	GRCC
7:30 PM-9:00 PM	Affinity Group Night Out	Offsite
9:00 PM-12:00 AM	Student Night on the Town	Offsite

11 Nov. | Tuesday

7:00 AM-5:00 PM	Registration Open	GRCC
8:00 AM-9:30 AM	Early Morning Sessions (Session 3)	GRCC
9:30 AM-10:00 AM	Break	GRCC
10:00 AM-11:30 AM	Late Morning Sessions (Session 4)	GRCC
11:30 AM-1:00 PM	Lunch on your own	GRCC
1:00 PM-2:30 PM	Collab Sessions (Session B)	GRCC
2:30 PM-3:00 PM	Break	GRCC
3:00 PM-4:30 PM	Early Afternoon Sessions (Session 5)	GRCC

*Greater Richmond Convention Center

11 Nov. | Tuesday

TIME	EVENT	LOCATION
4:30 PM-4:45 PM	Break	GRCC
4:45 PM-5:15 PM	Annual CERF Business Meeting	GRCC
5:15 PM-5:30 PM	Break	GRCC
5:30 PM-6:30 PM	Affiliate Society Meetings	GRCC
6:30 PM-7:00 PM	Break	GRCC
7:00 PM-10:00 PM	Social Event (Ticketed)	Offsite

12 Nov. | Wednesday

6:15 AM-7:15 AM	CERFers on the Run	Offsite
7:00 AM-5:00 PM	Registration Open	GRCC
8:00 AM-9:30 AM	Early Morning Sessions (Session 6)	GRCC
9:30 AM-10:00 AM	Break	GRCC
10:00 AM-11:30 AM	Late Morning Sessions (Session 7)	GRCC
11:30 AM-1:00 PM	Lunch on your own	Various Locations
11:30 AM-1:00 PM	LGBTQ+ Affinity Group Lunch	GRCC
1:00 PM-2:30 PM	Early Afternoon Sessions (Session 8)	GRCC
2:30 PM-3:00 PM	Break	GRCC
3:00 PM-4:30 PM	Collab Sessions (Session C)	GRCC
4:30 PM-7:00 PM	Poster Session 2	Offsite
7:00 PM-9:00 PM	Reunions and Receptions	TBD

13 Nov. | Thursday

6:15 AM-7:15 PM	CERFers on the Run	Offsite
7:00 AM-4:30 PM	Registration Open	GRCC
8:00 AM-9:30 AM	Plenary Session 2: Science for Solutions: Emerging Issues of Data Generation, Processing, and Sharing	GRCC
9:30 AM-10:00 AM	Break	GRCC
11:30 AM-1:00 PM	Lunch on your own	GRCC
1:00 PM-2:30 PM	Early Afternoon Sessions (Session 10)	GRCC
2:30 PM-3:00 PM	Break	GRCC
3:00 PM-4:30 PM	Late Afternoon Sessions (Session 11)	GRCC
5:30 PM-8:30 PM	Close Out Party and Student Awards Presentation	GRCC

*Greater Richmond Convention Center

CERF 2025 Conference Committees

Conference Co-Chairs
Cassondra Armstrong, South Florida Water Management District
Treda Grayson, US Environmental Protection Agency
Frank Reilly, LMI

Attendee Experience Committee Co-Chairs
Savanna Barry, University of Florida & Florida Sea Grant
Sommer Starr, Trent University
Mollie Yacano, Delaware NERR & Coastal Management Program

Art
Savanna Barry, University of Florida & Florida Sea Grant
Sommer Starr, Trent University
Mollie Yacano, Delaware NERR & Coastal Management Program

Early Career Networking Event
Lesley Baggett, AKRF, Inc.
Sohaib Alahmed, Halff Associates

Exhibitor Engagement
Allie Durdall, University of the Virgin Islands
Kaitlin Rommelfanger, University of the Virgin Islands

Field Trips
Erin Reilly, Virginia Institute of Marine Science
Serina Wittyngham, University of North Florida

Mentoring Program/First-Timer Orientation
Corianne Tatariw, Rowan University
Lori Sutter, University of North Carolina, Wilmington
Lorae Simpson, St. Johns River Water Management District

Social Event
Alina Spera, Woods Hole Oceanographic Institution
Erin Peck, University of Rhode Island
Cassondra Armstrong, South Florida Water Management District

Social Media
Joanna Parkman, FEMA
Veronica (Nani) Malabanan Lucchese, University of Maryland Center for Environmental Science
Jamon Jordan, Oregon State University

Student "On the Town" Night
Stacy Trackenberg, Louisiana State University
Susan Park, CERF

Student and Early Career Participation Awards
David Gillett, Southern California Coastal Water Research Project
Qian Zhang, University of Maryland Center for Environmental Science

Wellness Group
Enie Hensel, University of Florida
Elisa Baldrighi, University of Nevada Reno

Inclusive Culture Committee Co-Chairs
Kris Lewis, University of Rhode Island
Danielle Perry, Professionals of Color in the Environment

Navigators
Mike Allen, University of Maryland Center for Environmental Science

Volunteers:
Brooke Torjman, Texas A&M University
Sage Enright, Western Washington University
Monica Maldonado

Affinity Group Kick-Off, Lunches, Panel
Trevyn Toone, North Carolina State University

Volunteers:
Alexandra Bijak, Virginia Institute of Marine Science
Gabriela J. Reyes, University of Florida
Jamila Roth, University of Florida

Affinity Group Night Out
Gio McClenachan, Stony Brook University

Volunteer:
Gina Ralph, Virginia Institute of Marine Science

Professional Development Panel and Workshop
Fredika Moser, Maryland Sea Grant
Gaby Keeler-May, NOAA Restoration Center

Volunteers:
Gabrielle Saluta, Virginia Institute of Marine Science, College of William & Mary

Tribal/Traditional Ecological Knowledge
Matt Bethel, Louisiana Sea Grant
Guillermo Giannico, Oregon State University

ICC Communications Team

Reese Kober, URI Graduate School of Oceanography

Volunteer:
Narayan Kumar, University of Delaware

SPC Liaison

Zoe Shribman, Tulane University

AEC Liaison

Allie Durdall, University of the Virgin Islands

Rising TIDES Liaison

Christine Whitcraft, California State University Long Beach

Inclusive Leadership Program Liaison

Kris Lewis, University of Rhode Island
Danielle Perry, Professionals of Color in the Environment

Needs-Based Scholarship Program

Kris Lewis, University of Rhode Island
Danielle Perry, Professionals of Color in the Environment

Scientific Program Committee Co-Chairs

Marcus Beck, Tampa Bay Estuary Program
Pedro Morais, California Department of Water Resources

Coastal Design Competition

Jori Ann Erdman, James Madison University
Tiffany Troxler, Florida International University
Elizabeth Salewski, South Florida Water Management District
Jenna Clark, Maryland Sea Grant

Oral Sessions

Carolyn Weaver, Millersville University
Antonietta Quigg, Texas A&M University
Joe Reustle, Hampton University

Keynote and Plenary Sessions

Joel Hoffman, University of Minnesota
Robert Christian, East Carolina University (retired)

Poster Sessions

Erin Kinney, Houston Advanced Research Center
Joe Carlin, California State University Fullerton

Student Judging

Zack Darnell, University of Southern Mississippi
Kelly Darnell, University of Southern Mississippi
Zoe Shribman, Tulane University

Workshops and Collab Sessions

Jessie Jarvis, University of North Carolina Wilmington
Allison Fitzgerald, New Jersey City University

CERF Conference Staff

Susan Park, Executive Director
Tricia Fry, Abstract Manager
Megan Miller, Event Director
Jeannette McMillan, Assistant Event Director
Louise Miller, Chief Operating Officer
Tayton Hewitt, Marketing & Communications Coordinator

*A flock of Canada geese (*Branta canadensis*) joins other shorebirds and waterfowl to forage in a pond within the salt marshes of Parker River National Wildlife Refuge*

Photo: Karen Aerni

Predictive Ecology: The History of the University of Maryland Center for Environmental Science 1925-2025

The University of Maryland Center for Environmental Science (UMCES) traces its origins to the establishment of the Chesapeake Biological Laboratory in 1925. Originally directed to conduct scientific studies on Maryland's natural resources, UMCES and its constituent laboratories have become a crucial authority on the Chesapeake Bay and its watershed, and a leading force for the advancement of environmental science around the world. In honor of UMCES' centennial in 2025, former UMCES President (and ERF past president) Donald F. Boesch has penned a history of this network of laboratories—in effect tracing the evolution of Chesapeake Bay research over the past 100 years. Maryland Sea Grant publishes this book as the latest installment of its Chesapeake Perspectives series, a platform for scholars, researchers, and other experts to share their insights into the Bay's physical, biological, and cultural complexities.

"From summertime research out of a Patuxent River fisherman's shed to a statewide laboratory system that has influenced the management of estuaries worldwide, Donald Boesch chronicles a century of Chesapeake science. Boesch includes enough of the politics and personality clashes that shaped the century to give one a real appreciation how Chesapeake science—without which there would be little Chesapeake left—has survived so well."

- *Tom Horton, Chesapeake Bay author, journalist, and professor*

About the Author:

Donald F. Boesch is an internationally known marine scientist and science administrator. After leading the establishment of a marine research center in his native state of Louisiana, in 1990 he took the helm of what is now the University of Maryland Center for Environmental Science. Under his presidency, that enterprise grew into the multi-campus degree-granting institution we see today. Working under five Maryland governors of both parties, Boesch has played a leading role in integrating science-based thinking into the state's policy-making, especially related to the Chesapeake Bay and the climate crisis. He has received numerous awards, including designation as Admiral of the Chesapeake and a Sustained Achievement Award from the Renewable Natural Resources Foundation. He has served on numerous national and international advisory panels, including appointment by President Barack Obama to the National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling. Boesch stepped down as president of UMCES in 2017. In this book he offers a rich and candid history of the institution he guided for 27 years.

About the Chesapeake Perspectives Series:

This monograph is part of a series entitled Chesapeake Perspectives, produced by Maryland Sea Grant to encourage researchers, scholars, and other thinkers to share their insights into the unique culture and ecology of the Chesapeake Bay. Its audience includes environmental scientists and scholars, from marine biologists to cultural anthropologists, and a broad interested public that encompasses resource managers, watershed organizations, and citizen advocates.

Editors' Note: The book was published in 2025 and is available for purchase at https://www.mdsg.umd.edu/Bookstore/Books/predictive-ecology-history-university-maryland-center-environmental-science-1925

C-COAST

Changing the Culture of our Occupations to Achieve Systemic Transformation

CERF's Commitment to Sustaining Rising TIDES and the Inclusive Leadership Program

2023–2024 ILP participants at a kick-off retreat in September 2023 Photo: Susan Park

CERF recognizes, respects, and values the many facets of diversity within our membership. The differences among our members create a wide range of perspectives and approaches to problem-solving that are necessary to coastal and estuarine science and management. CERF has long articulated its commitment to diversity, equity, inclusion, justice, and accessibility (DEIJA) and to making CERF and our disciplines more safe, welcoming, and inclusive. We have revised language in our foundational documents and policies to reflect these values and have worked to weave DEIJA throughout all aspects of the society.

Two of the many ways we have been working to broaden participation and create a culture of inclusion and belonging are through the Rising TIDES (Toward an Inclusive, Diverse, and Enriched Society) Program[1] and Inclusive Leadership Program[2] (ILP). Rising TIDES supports students and recent graduates from groups underrepresented in CERF disciplines to participate in a program with mentoring, professional development, and networking to increase their sense of belonging and encourage them to pursue careers in marine science. CERF has supported four Rising TIDES cohorts since its inception in 2017. Recognizing the importance of changing the culture of CERF and our disciplines to create a safe and welcoming environment where everyone feels they belong, CERF launched the ILP in 2023 to support coastal and estuarine professionals from all career stages to become more effective and inclusive leaders and change agents. The program provides personal and professional development activities in a dynamic learning community where participants learn from facilitators as well as each other. Both programs were made possible through federal funding.

The funding CERF received through a project called C-COAST (Changing the Culture of Our Occupations to Achieve Systemic Transformation) allowed us to grow Rising TIDES from a program that only happened at the biennial conference to a yearlong program that offered the opportunity for students to also attend Affiliate Society meetings and the Restore America's Estuaries Summit to present their research, participate in additional professional development, and have more time for building connections within CERF. It also allowed us to implement a new program to support the growth of our members in other career stages.

Thanks to evaluators embedded in these programs, we have learned how effective they were in achieving their goals. They found that 100% of 2023–2024 Rising TIDES scholars felt the activities supported their sense of belonging and identity. The majority said that they felt accepted for who they are and, for many of

them, this program was the first time they felt comfortable to either be their authentic selves or be with others who "look like them" in the field. Interviews found examples of a range of value the program provided, from immediate value of the activities (e.g., expanded networks, opportunity to present their research) to reframing value – reconsidering how success is defined or having a fundamental shift in thinking or practice. An example of reframing is captured in this scholar quote: "... before this program, I would have assumed that spaces that were welcoming didn't overlap with spaces that were professional, and I probably would have just settled for the status quo wherever I went, but now that I've kind of realized that those spaces can and should exist professionally, I think that's going to make me… a lot more discerning in the types of spaces that I choose to inhabit professionally. So, if I end up working somewhere that doesn't respect me and know who I am, I don't think I would tolerate that anymore." For ILP, the evaluation found that 100% of surveyed participants felt the program met its three goals of educating participants on how to be more inclusive leaders, educating participants on how to change policies and practices that lead to inequities, and increasing participants' leadership skills and opportunities to make policies and practices of CERF and their home institutions more inclusive. Similarly, ILP participants felt the program provided many different kinds of value and gave specific examples of changes they have made as a result of the program, from changes they have made in interpersonal interactions to larger changes in informal or formal procedures at their institutions. These results demonstrate the value and success of these programs.

Unfortunately, due to recent US executive orders and changing priorities, most of CERF's federal funding for these programs has been terminated, as have many other awards focused on DEIJA. Despite this, CERF's Governing Board is committed to sustaining these programs and continuing the important work. At its April 2025 meeting, the board evaluated all of CERF's current and proposed programs and activities and concluded that these were two of the highest priority programs to sustain and grow.

While the board has invested some CERF funds to support the 2025–2026 cohort of Rising TIDES, CERF cannot sustain these programs alone. We are reaching out to all CERF members, *our community*, to ask for help. We welcome your ideas for securing funding, creative ways to sustain these programs, or any other potential solutions. Collectively, these programs have touched more than 200 participants, not to mention the many CERF members they have interacted with, and we want that number to continue to grow well into the future.

Please reach out to CERF Executive Director Susan Park (spark@cerf.science) or C-COAST Coordinator Amara Foster (afoster@cerf.science) with questions, ideas, or comments. Thank you for your support.

1. https://www.cerf.science/rising-tides-program
2. https://www.cerf.science/inclusive-leadership-program-ilp-

CERF's New Mission Statement

We are pleased to announce that CERF has a new mission statement!

CERF's mission is to advance research, knowledge, and stewardship of coasts and estuaries and sustain the education and professional development of a diverse and inclusive community.

The new mission statement is the result of extensive input and feedback from CERF members and the broader coastal and estuarine community. This is an important step for CERF, as the mission guides everything we do; it is a critical piece of CERF governance and underpins all decisions made by the Governing Board. This mission statement better aligns with CERF's new strategic direction, values, and vision. It maintains CERF's commitment to advancing the understanding and wise stewardship of estuaries and coasts worldwide while emphasizing the importance of supporting our members and codifying our commitment to equity and inclusion.

The voting members also approved minor changes to the Constitution to allow the Affiliate Societies some flexibility on the title of the person who will represent them on the CERF Governing Board.

Thank you to the more than 435 CERF members who participated in this important endeavor; you have paved the way for a bright new future for CERF!

Meet CERF's 2025–2027 Governing Board

We are pleased to present the CERF 2025–2027 Governing Board! Please join us in congratulating CERF's new President-elect, Secretary, Members at Large, and Student Member at Large. Thank you also to our continuing Board members and our new Affiliate Society representatives.

2025–2027 GOVERNING BOARD

President
Sharon Herzka
The University of Texas at Austin Marine Science Institute

President-Elect
Christine Whitcraft
California State University, Long Beach

Past President
Linda Blum
University of Virginia

Secretary
Alex Bijak
Virginia Institute of Marine Science

Treasurer
David Tomasko
Sarasota Bay Estuary Program

Member at Large | 2023–2027
Allison Fitzgerald
New Jersey City University

Member at Large | 2023–2027
Benjamin Walther
Texas A&M University – Corpus Christi

Member at Large | 2025–2029
Kim de Mutsert
University of Southern Mississippi

Member at Large | 2025–2029
Pedro Morais
California Department of Water Resources

Student Member at Large | 2025–2027
Kelley Savage
Texas A&M University – Corpus Christi

Affiliate Society Representatives

Atlantic Canada Coastal and Estuarine Science Society
Heather Hunt
University of New Brunswick

Atlantic Estuarine Research Society
Gulni Ozbay
Delaware State University

Association of Marine Laboratories of the Caribbean
Ron Oleynik
Holland & Knight LLP

California Estuarine Research Society
Janet Walker
Southern California Coastal Water Research Project

Gulf Estuarine Research Society
Stephanie Archer
Louisiana Universities Marine Consortium

New England Estuarine Research Society
John Sheppard
Massachusetts Division of Marine Fisheries

Southeastern Estuarine Research Society
Loren Mathews
Georgia Southern University

Pacific Estuarine Research Society
To Be Decided

2025 CERF Annual Business and Membership Meeting

CERF will hold its 2025 Annual Business and Membership Meeting on Tuesday, 11 November, from 4:45–5:15 PM EST in the Grand Ballroom C at the Greater Richmond Convention Center. In addition to regular business, the outgoing Governing Board will be recognized, and the incoming Governing Board will be seated. All members are invited and encouraged to attend.

2025 CERF Achievement Award Recipients

Join us in celebrating the 2025 CERF Achievement Award recipients! The recipients of these awards embody the mission of CERF to advance understanding and wise stewardship of estuarine and coastal ecosystems worldwide by promoting research; supporting the education of scientists, decision-makers, and the public; and facilitating communication among these groups.

The federation thanks our achievement awards committee chair, Kim de Mutsert, as well as all the subcommittee chairs and committee members, for their tireless efforts to recruit and select the outstanding recipients of this year's awards. CERF also thanks the many nominators and letter writers who supported the exceptional nominations received this year.

Award Recipients

Odum Lifetime Achievement Award

The Odum Award is named for the three outstanding ecological scientists in the Odum family: Dr. Howard T. Odum; Dr. Eugene P. Odum; and Dr. William E. Odum, III. This award recognizes the lifetime achievements of an outstanding estuarine scientist. It honors an individual whose record of sustained accomplishments has made important contributions to our understanding of estuaries and coastal ecosystems.

Ángel Borja
Principal Investigator | AZTI

The awards committee is pleased to announce Dr. Ángel Borja as the recipient of the 2025 Odum Award for Lifetime Achievement. His research has had an enormous impact on colleagues and on the management of estuaries and coasts. Dr. Borja and his research team developed AMBI: AZTI's Marine Biotic Index and M-AMBI: multivariate-AMBI. The M-AMBI benthic assessment tool "has become the industry standard for marine and estuarine benthic assessments in many countries." The US Environmental Protection Agency (US EPA) adopted the M-AMBI approach, and it has become "an integral part of the US EPA Coastal Condition Assessment." One supporting letter highlights the impact of his work: "I know of no other environmental scientist who has been so successful in promoting a holistic, collaborative, and cooperative approach to assessing coastal and estuarine ecosystem health and identifying both protective and remedial pathways." Dr. Borja's research expands well beyond the M-AMBI index, with significant contributions related to habitat mapping, biological oceanography, biodiversity, and ecosystem goods and services. Overall, he has been exceptionally productive with more than 325 refereed publications and 30,000 citations. Over the last few years, his work has received more than 2,000 citations annually, reflecting its significant impact on the field.

Beyond his research, he is a skilled communicator, speaking effectively on behalf of estuaries and coasts to the public, managers, and policy makers, both in Europe and globally. Dr. Borja has consistently given back to the field by training and mentoring new scientists. "Since 2004, he has been organizing annually a Summer School on marine research, with a high international success (an average of 50–60 attendees/year, 15–20 countries/year); in 2025 it will be the twenty-first edition. This school is now a meeting forum for professionals, managers and students, with a program with international level professors bringing new views." He has completed approximately 50 reviews per year and has been recognized as an outstanding reviewer by multiple journals, including *Estuaries and Coasts* in 2008. Dr. Borja has been a CERF member since 2006 and despite being in Europe, he has organized sessions for multiple CERF conferences: 2007, 2009, 2011, 2019, and 2021.

Cronin Early Achievement Award

This award recognizes the significant accomplishments of an estuarine scientist who is in the early stages of their career development. The recipient will have shown great promise with work carried out during the first six years past the PhD.

Kathryn (Kat) Beheshti
Assistant Researcher | University of California, Santa Barbara


Photo: Eunhee Ruby Lee

The awards committee is pleased to announce Dr. Kathryn (Kat) Beheshti as the recipient of the 2025 Cronin Award for Early Achievement. Dr. Beheshti is a coastal ecologist whose work bridges fundamental science and applied coastal management. Since earning her PhD from the University of California, Santa Cruz in 2021, she has built an impressive career applying ecological insights to conservation, restoration, and resilience-building efforts. Following a California Sea Grant Fellowship with the Ocean Protection Council, where she worked on sea-level rise and coastal resilience initiatives, Dr. Beheshti now serves as an Assistant Researcher at the University of California, Santa Barbara. She also leads as Principal Investigator for the San Onofre Nuclear Generating Station Mitigation Monitoring Program (SONGS MMP), overseeing large-scale coastal mitigation projects and managing a team of eight full-time staff.

Dr. Beheshti's research is unified by a core scientific vision: understanding the loss and recovery dynamics of coastal foundation species to guide their effective management and protection. She has employed a powerful combination of long-term monitoring datasets and experimental fieldwork across estuarine habitats, including salt marshes, seagrass meadows, and kelp forests—to develop generalizable principles that inform restoration strategies. Her innovative work has not only contributed to advancing estuarine ecological theory but also has had a direct impact on coastal policy and restoration practices throughout California.

In addition to her scholarly output, which includes numerous peer-reviewed publications, technical reports, and presentations to scientific and public audiences, Dr. Beheshti has distinguished herself through her outreach, applied communication efforts, and commitment to influencing policy. The selection committee was especially impressed by her collaborative leadership across diverse projects and her ability to make science accessible through public-facing media such as blogs and videos.

Dr. Beheshti exemplifies the spirit of the Cronin Award, combining academic excellence, real-world application, and service to the coastal science community. CERF is proud to recognize her as a rising leader in estuarine science and looks forward to the continued impact of her work.

William A. Niering Outstanding Educator Award

To recognize the central role that education plays in achieving the objectives of our society, the Federation's Governing Board established an award named for a leader in estuarine education, Dr. William A. Niering. The Award is for an individual who has played a particularly important role in education at any level—from primary school to the graduate level, inside or out of the classroom, or in the education of the general public through outreach activities.

Jacqueline Richard
Director of Coastal Studies and GIS Technology | Nunez Community College

The awards committee is proud to announce Jacqueline Richard as the recipient of the 2025 William A. Niering Outstanding Educator Award. As Director of Coastal Studies and GIS Technology at Nunez Community College, Ms. Richard (known as "Jackie" to her students) has transformed environmental education by empowering her students, leading a diversity of workforce programs aligned with Louisiana's evolving environmental and energy landscape, and dedicating her career to coastal restoration. Students and colleagues describe her as a "passionate and hands-on educator" who "meets students where they are," recognizing the barriers to entry that many post-secondary education students from the Greater New Orleans area face. At Nunez, she has led the development of technical certificates and diplomas, and forged partnerships to support coastal restoration efforts. A former student wrote, "She embodies education in a way that inspires me to take what I've learned and to do something with it." Ms. Richard's contribution to education extends well beyond the classroom. She was elected chair of the Louisiana Environmental Education Committee (LEEC), which has developed an Environmental Literacy

Plan for the state; co-created the "WaterMarks360" program that provides virtual exploration of coastal habitats; serves on the Coalition to Restore Coastal Louisiana Advisory Council; and even brought the NFL green team, Force Blue (a group of marine veterans), Super Bowl host committee, and other volunteers to build an oyster reef with 52 tons of oyster shells in conjunction with Super Bowl LIX in New Orleans. It would be nearly impossible to capture the true educational impact Ms. Richard has had both in and out of the classroom in one paragraph. In the end, however, the common thread among letter writers was Ms. Richard's remarkable dedication to her students and her exceptional contributions to environmental education—and perhaps most importantly, her unwavering willingness to "show up" for her community. For these reasons, we are honored to present the 2025 William A. Niering Outstanding Educator Award to Ms. Jacqueline Richard.

Pritchard Outstanding Physical Oceanography Paper Award

This award was established to honor Dr. Donald W. Pritchard, whose insightful research on the physical dynamics of coastal systems set the stage for much of the research in physical oceanography that is being conducted today. The Pritchard Award recognizes the author(s) of the best physical oceanography paper published in Estuaries and Coasts *within the two-year interval between CERF conferences.*

Julia Mullarney, Hemanth Vundavilli, and Iain MacDonald

Hemanth Vundavilli
Research Associate | Louisiana State University, Baton Rouge
Julia C. Mullarney
Associate Professor | University of Waikato, New Zealand
Iain T. MacDonald
Scientist | National Institute of Water and Atmospheric Research, New Zealand

Paper: *The Influence of River Plume Discharge and Winds on Sediment Transport into a Coastal Mangrove Environment*

The awards committee is pleased to announce that the publication "The Influence of River Plume Discharge and Winds on Sediment Transport into a Coastal Mangrove Environment" by Vundavilli et al. (2024) has been awarded the 2025 Pritchard Award for Outstanding Physical Oceanography Paper.

This study stood out for its thoughtful use of process-oriented simulations to explore how tides, winds, and river discharge influence sediment transport along mangrove shorelines. The authors did an excellent job of visualizing complex results and summarizing them in a clear, conceptual diagram. Their effort to distill findings from more than 50 simulations into an accessible and meaningful format was particularly impressive.

The paper also introduces a zone-based salinity framework to define different regimes of plume behavior and sediment exchange, adding clarity to how these dynamics operate. This approach makes the work relevant not only to physical oceanography but also to broader topics like coastal geomorphology, hydrology, estuarine ecology, and climate adaptation planning.

You can read the open access article online.[1]

1. Vundavilli, H., J.C. Mullarney, and I.T. MacDonald. 2024. Influence of River Plume Discharge and Winds on Sediment Transport into a Coastal Mangrove Environment. *Estuaries and Coasts* 47(5): 1236-1254. https://link.springer.com/article/10.1007/s12237-024-01367-2

Margaret A. Davidson Stewardship Achievement Award

This award was established to honor Margaret A. Davidson's distinguished career in coastal resource management and her support of the application of science to the wise stewardship of estuaries and coasts. The Davidson Award recognizes an individual who demonstrates extraordinary leadership, service, innovation, and commitment to the management of estuarine and coastal systems. Other CERF awards focus on research and education excellence; this award recognizes those who have worked in the estuarine and coastal arena and excelled in management and policy. Nominees have demonstrated at least 10 years of extraordinary leadership, service, innovation, and commitment to the management of estuarine and coastal systems. Career contributions may include the application of science toward management and policy activities, translation and outreach of findings to engage with citizens and partners, and promoting stewardship of estuarine and coastal systems.

Pamela Borne Blanchard
Associate Professor | Louisiana State University

The awards committee is pleased to announce that the recipient of the 2025 Davidson Award for Individual Stewardship Achievement is Dr. Pamela Borne Blanchard. The success and longevity of the Louisiana State University Coastal Roots Program that Blanchard has co-directed and led for more than 20 years are quite impressive. The nomination materials highlighted the breadth and reach of the education program during that period (i.e., 46 schools, 17 parishes, and 31,000 participants to date) and this was one of the most compelling aspects of the nomination for the awards committee. Dr. Blanchard's demonstrated commitment to building and preparing young environmental stewards is praiseworthy. Building student identity and agency as environmental stewards from a young age marries well with Margaret Davidson's legacy in stewardship.

Coastal Stewardship Award (Organization)

CERF established the Coastal Stewardship Award to honor notable achievements in promoting the wise management of estuarine and coastal systems. This award recognizes specific projects, programs, and organizations for their exemplary stewardship activities, including success in management, policy, restoration, and conservation efforts. CERF appreciates the multiple scales at which impacts may be achieved; accordingly, the Coastal Stewardship Awards are occasional awards and may represent a hierarchy of recognition at CERF biennial conferences.

The University of Maryland Center for Environmental Science

UMCES
100 YEARS OF SCIENCE

The awards committee is pleased to announce that the 2025 CERF Achievement Award for Organizational Coastal Stewardship has been awarded to The University of Maryland Center for Environmental Science (UMCES).

Appropriate for the theme for this conference, "Estuaries: Tradition and Transition," this Achievement Award recognizes UMCES for 100 years of "research, public service, and education" in support of coastal stewardship. Beginning as the Chesapeake Biological Laboratory (CBL) in 1925, UMCES has grown to six units, including the Horn Point Laboratory, the Integration and Application Network, Maryland Sea Grant, the Institute of Marine and Environmental Technology, and the Appalachian Laboratory.

Application of science for public good has always been a central tenet of UMCES, and its faculty and staff are encouraged to engage with state and federal agencies, non-profit organizations, and the public to provide science and technical assistance in support of stewardship. In particular, but not exclusively, UMCES has played a key role in understanding the Chesapeake Bay and providing information to guide its management and restoration.

Scientists at CBL were part of the group that formed the Atlantic Estuarine Research Society (AERS) in 1949, which later colluded with the New England Estuarine Research Society to create the Estuarine Research Federation, the forerunner of CERF. The first president of both AERS and ERF was Gene Cronin, the

Director of CBL at the time.

There are many specific examples of UMCES leadership in understanding, managing, and restoring coastal environments. UMCES has also strengthened the scientific workforce through the education of its many graduates who have served coastal stewardship throughout the United States and internationally.

In summary, the 100th anniversary of the beginning of UMCES is an ideal time to recognize its many contributions to coastal stewardship, to CERF, and to the world.

Diversity, Equity, Inclusion, and Justice Champion Award

This award recognizes the significant contributions of an individual who has worked for greater diversity, equity, inclusion, and justice in estuarine and coastal science, management, education, and/or stewardship. It honors a person who demonstrates exceptional long–term or emerging leadership and commitment to positive change.

Kim de Mutsert
Associate Professor | The University of Southern Mississippi

The awards committee is delighted to announce Dr. Kim de Mutsert as the recipient of the 2025 CERF DEIJ Champion Award for exemplifying sustained and impactful leadership in advancing diversity, equity, inclusion, and justice (DEIJ) in coastal and estuarine science.

Dr. De Mutsert has made significant contributions at George Mason University and the University of Southern Mississippi, where she is widely recognized for cultivating inclusive research environments and mentoring students across a wide range of backgrounds and career stages. Her mentees describe a research culture that is both academically rigorous and deeply compassionate, reflecting her commitment to equitable and supportive mentorship.

Dr. De Mutsert's leadership extends across professional societies and institutions. Within CERF, she has chaired the DEIJ Champion Award Subcommittee, the Equity in Awards Task Force, and the CERF Achievement Awards Committee. At the University of Southern Mississippi, she chairs both the School of Ocean Science and Engineering's DEI Committee and the Fellowship Admissions Review Committee, and she has served on the Mississippi Institutions of Higher Learning (IHL) Excellence in Diversity and Inclusion Award Committee.

Dr. De Mutsert's community engagement efforts are equally inspiring. She has contributed to public education, supported professional development for women in marine science, and facilitated early STEM exposure for high school students. Her letters of support shared compelling stories of students and colleagues whose personal and professional paths have been shaped by her advocacy, mentorship, and tireless work to build a more inclusive scientific community.

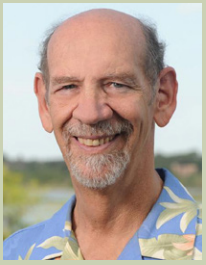
We celebrate Dr. De Mutsert for her extraordinary efforts and leadership, which continue to inspire and transform the field of coastal and estuarine science.

The Soch River flowing into the sea, Gwynedd, Wales, United Kingdom Photo: Jason Wells

Distinguished Service Award

The Distinguished Service Award recipient is selected by the CERF President for their exceptional volunteer service to the Federation

Paul Montagna
Endowed Chair for HydroEcology | Harte Research Institute, Texas A&M University-Corpus Christi



CERF is pleased to announce Dr. Paul Montagna as the recipient of the 2025 CERF Distinguished Service Award. Throughout his professional career, Dr. Montagna has been an active member of affiliate societies and ERF, now CERF, beginning when he won the best graduate student paper awards at both the Southeastern Estuarine Research Society meeting and ERF conference in 1982. He has served on the Governing Board twice—first as member at large (1997–2001) and then as the Gulf Estuarine Research Society (GERS) President (2005–2007). He organized the 1995 ERF conference and the 2006 GERS meeting. He has served on multiple committees and received the Niering Award for Outstanding Educator in 2013. Yet, his most notable contribution may be his service to (C)ERF publications.

For over 30 years, Dr. Montagna has been actively involved with *Estuaries* and *Estuaries and Coasts* (ESCO) as Associate Editor, Publications Committee member, and special issue guest editor, among other roles. Perhaps most significant is his role as ESCO Coeditor in Chief since January 2017; he will be stepping down at the end of 2025 after nine years in this critical position. CERF's success depends on ESCO, and ESCO's success reflects Dr. Montagna's dedication to strengthening the journal, supporting the Associate Editors and peer reviewers, and serving the authors who submit their manuscripts. Because of his commitment to CERF and ESCO, the state of the journal is strong.

During his tenure as Coeditor in Chief, he has been instrumental in maintaining the integrity and quality of the review process during a period where the number of submitted manuscripts has dramatically increased. He individually oversees the review of about 325 manuscripts each year and provides support for more than 50 Associate Editors. In concert with the Editorial Board and peer reviewers, he oversaw a reduction in the time from submission to first decision; in the first six months of 2025, it is down to just 27 days. He has been at the helm during a time of evolving CERF priorities and a rapidly shifting industry, leading ESCO through a myriad of changes including new publishing models and agreements, an increase in open access, new article types to highlight research with management application and on under-characterized systems, increased recognition of the work of the Editorial Board and peer reviewers, the recent conversion to continuous publishing, and the establishment of "collections," all of which benefit the journal, authors, and members. He is a recognized expert on the impact of publishing industry changes on scientific society journals and was invited to represent CERF and ESCO on a panel for the US House Science, Space, and Technology Committee staff in November 2024.

Dr. Montagna has never hesitated to volunteer for difficult assignments in any way that he could. He is a consistent voice of reason, bringing his analytical skills and logic to ESCO and the Federation. He has given his time and expertise tirelessly and unselfishly to ERF and CERF. For these reasons, he is a clear choice for the CERF Distinguished Service Award.

Springer Nature Editor of Distinction Awards for *Estuaries and Coasts*

Springer Nature, the publisher of *Estuaries and Coasts*, is thrilled to celebrate its exceptional editors whose dedication to its journals and research communities is truly inspiring. They are proud to honor this remarkable work through the Springer Nature Editor of Distinction Awards, and are delighted to announce the recipients of the following awards for *Estuaries and Coasts*:

2025 Springer Nature Editorial Contribution Award: This award recognizes the role of the editor in their assessment of new submissions and rigorous management of the peer review process, safeguarding the scientific accuracy of the published record and ensuring our authors' work commands the highest level of trust. This award is given to editors who rank in the top 20% for the number of manuscripts sent to peer review.

Eric Powell
Holly Greening
James Nelson
Just Cebrian
Mark Peterson

2025 Springer Nature Author Service Award: This award recognizes the contributions of our editors in providing an outstanding author experience, ensuring the peer review process is efficient, constructive, and fair. By rewarding such exceptional editors, we recognize the vital role they play in managing the peer review process. This award is given to editors who rank in the top 20% for turnaround time to first decision.

Hans Paerl
Wen-Xiong Wang
Mark Peterson

Estuaries and Coasts Outstanding Reviewers

Paul A. Montagna, Just Cebrian, Melisa Wong
Coeditors in Chief, Estuaries and Coasts

Estuaries and Coasts is proud to recognize the dedicated efforts of Outstanding Reviewers in each issue of *CERF's Up!* This recognition honors reviewers based on the number of reviews they have performed and their promptness in submitting these reviews.

This issue is special because we recognize reviewers for the biennium between CERF meetings. For the period between 1 July 2023 and 30 June 2025, we are happy to highlight 34 Outstanding Reviewers for their significant contributions to the quality and success of *Estuaries and Coasts* over two years.

Thank you for your invaluable contributions!

9 Reviews:
Joel Anderson

8 Reviews:
Matthew Eric Kimball

7 Reviews:
Alan Whitfield
Anna R. Armitage

6 Reviews:
Wei-Jen Lin
Matthew Bryan Ogburn
Neil Saintilan
Guoyu Yin

5 Reviews:
Marco Bartoli
Alex Cabral
Kyle Capistrant-Fossa
Wei-Jen Huang
Orlando Lam-Gordillo
Michael J. Osland
Jennifer L. Ruesink
Ahmed M. Saqr
Ashley Smyth
Shelby L. Ziegler

4 Reviews:
Marcus W. Beck
Jing Chen
M. Zachary Darnell
Lei Gao
Julie Krask
Xianbiao Lin
Monia Magri
Melinda Martinez
Nicole Millette
Matt Nobriga
Cindy M. Palinkas
Michael Polito
Katrina L. Poppe
Daniel S. Swadling
Michael Wetz

Estuaries and Coasts Editors' Choice Awards

Paul A. Montagna, Just Cebrian, Melisa Wong
Coeditors in Chief, Estuaries and Coasts

July 2025 Volume 48 Issue 4
Souza, P.M. and S.J. Brandl. 2025. Historic Freshwater Inflow Silences an Estuarine Ecosystem. *Estuaries and Coasts* 48(4): 94.
https://doi.org/10.1007/s12237-025-01521-4
https://rdcu.be/eDZHu

September 2025 Volume 48 Issue 5
Smits, A.P. et al. 2025. Drought and Aquatic Vegetation Alter Water Clarity and Fish Assemblages in Freshwater Tidal Ecosystems of the Sacramento-San Joaquin River Delta. *Estuaries and Coasts* 48(5): 120.
https://doi.org/10.1007/s12237-025-01556-7
https://rdcu.be/eDZIk

The Latest *Coastal & Estuarine Sciences News* (CESN)

Merryl Alber, CESN Editor, University of Georgia
Janet Fang, CESN Science Writer/Managing Editor

The mission of CESN is to highlight the latest research in the journal *Estuaries and Coasts* that is relevant to environmental managers. CESN is a free electronic newsletter that is posted online and delivered to subscribers on a bimonthly basis (six issues per year). CESN is available in both English and Spanish. Please visit www.cerf.science/cesn to read the full summaries and sign up to have future issues delivered to your email inbox. And please encourage the environmental managers you work with to sign up as well.

La misión de CESN es destacar las últimas investigaciones en la revista *Estuaries and Coasts* que sean relevantes para los gestores ambientales. Es un boletín electrónico gratuito que se entrega a los suscriptores cada dos meses. Regístrate en www.cerf.science/cesn-spanish.

2025 CESN Issue 3

Macroinfauna Recovery After the Deepwater Horizon Spill
Heavily oiled marshes will likely require more than a decade to recover, if at all
Source: Pant, M. et al. 2025. Recovery of Saltmarsh Macroinfauna After the *Deepwater Horizon* Oil Spill. *Estuaries and Coasts*. 48: 87.
https://doi.org/10.1007/s12237-025-01520-5
https://rdcu.be/efaUP
https://cerf.memberclicks.net/cesn-2025-issue-3#Article1

Where Else Can Living Shorelines Be Useful?
An experimental comparison of shoreline designs
Source: Tweel, A. et al. 2025. Investigating the Effects of Site Characteristics and Installation Material Type on Intertidal Living Shoreline Performance in Coastal South Carolina, USA. *Estuaries and Coasts.* 48: 79.
https://doi.org/10.1007/s12237-025-01515-2
https://rdcu.be/efe9W
https://cerf.memberclicks.net/cesn-2025-issue-3#Article2

The Blob is a Harbinger of Things to Come
Using a marine heatwave to understand habitat responses
Source: Uyeda, K.A. et al. 2025. Increases in Sea Level Associated with a Marine Heatwave Drive Tidal Marsh Habitat Shifts. *Estuaries and Coasts.* 48: 99.
https://doi.org/10.1007/s12237-025-01530-3
https://rdcu.be/eonyJ
https://cerf.memberclicks.net/cesn-2025-issue-3#Article3

How Juvenile Bull Sharks Respond to Freshwater Input
Implications for flow restoration in Florida
Source: Zikmanis, K. et al. 2025. Legacies of Ecosystem Modification: Factors Affecting Long-Term Variation in the Abundance of Juvenile Bull Sharks in a Subtropical Estuary. *Estuaries and Coasts.* 48: 81.
https://doi.org/10.1007/s12237-025-01508-1
https://rdcu.be/efe9I
https://cerf.memberclicks.net/cesn-2025-issue-3#Article4

Sunrise over the salt marshes in Ipswich, Massachusetts, USA

Photo: Karen Aerni

The Once and Future Estuary

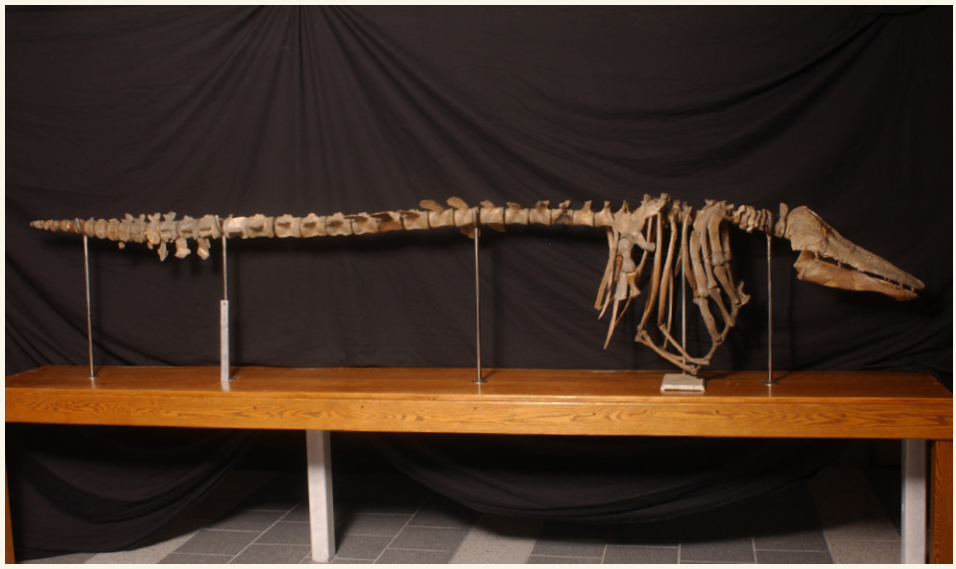
Stephen S. Hale
ORCID https://orcid.org/0000-0001-7858-3750
stephenshale@gmail.com

In 1849, while watching workmen dig a cut for a railroad near his farm in Charlotte, Vermont, John Thorpe noticed strange bones jutting from the clay soil. Intrigued, he sent a few to state naturalist Zachary Thompson. Thompson gathered more bones and pieced together a full skeleton. It turned out to be a beluga whale (*Delphinapterus leucas*). The discovery of a marine mammal, native to Arctic and boreal waters, so far inland and high above sea level, sparked scientific curiosity. It drove scholars of the day to learn more about Earth's ice age and glacial geology. They eventually uncovered a story of a massive ice sheet and the Champlain Sea.

The Champlain Sea

That sea formed around 13,000 years ago as the Wisconsin ice sheet of the late Pleistocene Epoch retreated. The St. Lawrence basin, depressed by the weight of an ice sheet up to 3 km thick, had sunk below sea level. When blocking ice melted, the rising Atlantic Ocean surged in. The Champlain Sea covered 55,000 km^2 of present-day Vermont, New York, Quebec, and Ontario (just short of Lake Ontario), an area more than four times the size of today's Chesapeake Bay. Water depths ranged up to 200 m.

In the north, towering ice cliffs calved icebergs into silty, gray waters laden with glacial rock flour.



Fossil skeleton of the Charlotte beluga whale at the Perkins Museum, Department of Geography and Geosciences, University of Vermont Photo: Bill DiLillo

Wetlands and tundra covered the southern edge. Sediment cores with fossils and pollen revealed the chronology of changing conditions. The water, initially cold, warmed over time, ranging from -1 to 8 °C. Salinity varied from 10 to 30, so the sea likely functioned as an estuary. Meltwater from the retreating ice sheet and small alpine glaciers lowered salinity over time; at some point, it became too low to support marine species.

The fossil record reveals a changing environment—many species in the early Champlain Sea fossil record live in the Arctic and sub-Arctic today. Herds of walruses lived on the ice edge; bearded seals and ringed seals bred and rested on pack ice. Belugas, tolerant of estuarine conditions, were the most common whale. As the sea warmed, harbor seals, which prefer open water, became the dominant seal. When the sea became less saline, boreal and estuarine foraminiferans and marine mollusks replaced earlier northern marine ones.

As the isostatic rebound raised the land surface, the sea shrank and shallowed. By around 9,000 years ago, the rising land had severed the ocean connection. Rainfall gradually freshened the waters and the Champlain Sea came to an end, replaced in its southern arm by Lake Champlain. What remains of the sea today in the lake are relic shorelines up to 200 m above current sea level and marine fossils in the clay sediments. A few euryhaline species survived the transition—sea lamprey, rainbow smelt, and Atlantic salmon (later, over-fishing and damming of rivers extirpated the salmon). Three marine plant species still cling to life on some sandy shores.

If the Greenland and Antarctic Ice Sheets ever fully melted, the global sea level would rise roughly 67 m, more than enough to reach the 29 m elevation of Lake Champlain and turn it back into an estuary. But not quite enough to reach the 74 m elevation of Lake Ontario.

CERF 2023–2025 GOVERNING BOARD

President
Linda Blum
University of Virginia

Past President
Leila Hamdan
University of Southern Mississippi

President-Elect
Sharon Herzka
The University of Texas at Austin Marine Science Institute

Secretary
Lilian Aoki
University of Oregon

Treasurer
Erik Smith
University of South Carolina

Members at Large

Member at Large (2021–2025)
Treda Grayson
US Environmental Protection Agency

International Member at Large (2021–2025)
Catherine Lovelock
University of Queensland

Member at Large (2023–2027)
Allison Fitzgerald
New Jersey City University

Member at Large (2023–2027)
Benjamin Walther
Texas A&M University–Corpus Christi

Student Member at Large (2023–2025)
Sommer Starr
Trent University

Affiliate Society Representatives

ACCESS
Jeff Clements
Fisheries and Oceans Canada

AERS
Jessie Jarvis
University of North Carolina Wilmington

CAERS
Julio Lorda
Universidad Autónoma de Baja California

GERS
Charlie Martin
University of South Alabama and Dauphin Island Sea Lab

NEERS
Danielle Perry
National Oceanic and Atmospheric Administration

PERS
Jason Stutes
Tetra Tech, Inc.

SEERS
Amanda Kahn
South Florida Water Management District

Journal Officials

Coeditors in Chief
Just Cebrian
King Abdullah University of Science and Technology

Paul Montagna
Texas A&M University–Corpus Christi

Melisa Wong
Fisheries and Oceans Canada

Reviews Editor
Ken Heck
Dauphin Island Sea Lab

Managing Editor
Taylor Bowen

CESN Managing Editor
Merryl Alber
University of Georgia

CESN Science Writer/Managing Editor
Janet Fang

Contact Information

Coastal & Estuarine Research Federation
2150 North 107th Street, Suite 330
Seattle, WA 98133-9009
(206) 209-5262
info@cerf.science

Executive Director
Susan Park
(804) 381-6658
spark@cerf.science

Chief Operating Officer
Louise S. Miller
info@cerf.science

CERF's Up! Bulletin

Coeditors:
Kyle Capistrant-Fossa and Julie Walker
Managing Editor: Tayton Hewitt
Copy Editor: Andra Kendall
Layout Editor: Rhonda Cole

Comments or questions on any piece in this issue? Email bulletin@cerf.science

COASTAL & ESTUARINE RESEARCH FEDERATION
2150 N 107th St, Ste 330
Seattle, WA 98133
Phone: (206) 209-5262
Website: www.cerf.science
Email: info@cerf.science