

CERF's Up!

Volume 49 • Number 2 • June 2023

**Riding the Social Science Wave
Estuarine & Coastal Sciences
Association Celebrates 50 Years**



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



CERF's Up!

Volume 49 • Number 2 • June 2023

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Editors' Note: We're seeking two new *CERF's Up!* Co-Editors! If you're interested in sharing your science communication skills with CERF members and want to help tell estuarine science and management stories, provide career advice and training, discuss hot topics in the field, and more, this may be a great opportunity for you! Editors help to solicit content that helps keep the CERF community informed with fresh perspectives, news, and information relevant to our diverse membership. Editors can be from any discipline, geographic location, or career stage; we're looking for a diversity of perspectives and interests. Contact bulletin@cerf.science to learn more and express your interest.

Front Cover: A storm rolling in over the west end of Dauphin Island, Alabama, USA Photo: Bethany Carl Kraft

Back Cover: A view of the Atlantic Ocean and the rocky intertidal habitat of Nahant, Massachusetts, USA
Photo: Karen Aerni

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



Leila Hamdan
CERF President

Since moving to the Gulf Coast in 2016, I have been learning new turns of phrase; a few puzzling, most entertaining, and many giving me new ways to communicate ideas and connect with others. I have some colleagues who are “idiom generators,” and I find myself at the edge of my seat to see in what new and interesting way they will wrap words in a figurative meaning. The ubiquitous and inclusive “y’all” long ago out-competed my native New Jersey version of a term to address a group. A recent favorite, “Do what?” stated with deep emphasis on the “h” and a head tilt, does a wondrous amount of work expressing puzzlement. That one is always going to be hard for my New Jersey roots to pull off, but it works when it comes from within. Then there’s being in the “short rows;” it’s not regional, but one I have only heard in my current geography, and it is a tidy way of expressing nearing the end of something. This term has its origin in either farming or knitting, two things I have little knowledge of, but I have taken to it, especially now, with only five months to go in my presidency. It’s a good time to check in on how this is going.

When I set out with my term of service, I had a neat list of tasks and goals. Making lists is easy. The work never unfolds entirely as planned, and it must align with the goals of the CERF Governing Board, our volunteers, and the needs of the membership. From the start, however, I have reached towards two key pieces: the CERF Strategic Plan, and a professional development program to benefit future CERF leaders.

After nearly a year of gathering input from the membership and wider coastal community, ideas sessions, and facilitation, the CERF Governing Board unanimously approved Visions V, the CERF Strategic Plan spanning 2023–2026.¹ We made the decision to shorten the plan to four years, understanding success takes work, an action plan, and timescales that are relevant and responsive. We begin this plan with aspirations for 2026, building CERF together as a diverse, welcoming, and inclusive federation at the center of the most urgent conversations about estuarine and coastal ecosystems. We reinvigorate our commitment to research and knowledge to support management and policy. We also aspire to be where members turn to advance careers throughout their whole professional journey. That last part touches my heart, my head, and my list of goals.

In past President’s messages, I have mused on the importance of empowering members with skills to help advance careers, and members’ ability to shape CERF and the institutions we work in. An important area for leaders is learning skills to advance the value of experiences, ideas, and identities. In Summer 2022, in collaboration with members from different institutions of higher education and government service, CERF submitted a proposal called “C-COAST: Changing the Culture of our Occupations to Achieve Systemic Transformation” to the National Science Foundation’s

Leading Culture Change Through Professional Societies of Biology

(BIO-LEAPS). The project will provide the resources for the CERF Inclusive Leadership Program (CILP), an initiative to engage and empower leaders in coastal and marine science with skills that will help them ignite and sustain culture change in our fields toward a more equitable and inclusive community. The CILP will provide resources to engage leaders at various stages of their careers. Established institutional leaders will be sought to deploy strategies to make current practices equitable (Ignite). Future leaders will be sought to gain skills that help them inclusively advance and lead coastal science institutions (Sustain). The project will expand Rising TIDES (Toward an Inclusive, Diverse, and Enriched Society), a CERF program that already brings students to CERF conferences with support, mentorship, and professional development. C-COAST expands Rising TIDES to a 16-month program, enabling a foundation for lasting success.

From here, as a federation we must put ideas from Visions V into action. The first step is an action plan to guide the work for the 2021–2023 Board’s remaining term and to set the next Governing Board up for success. The C-COAST team is rolling up their sleeves, developing trainings to benefit members, and launching the call for applications. My time as CERF President may be in the short rows, but we, as a federation, “have a long row to hoe but are making good progress.”

[1. Visions V can be found on pg. 16](#)

Riding the Social Science Wave to Study Human Dimensions of Coastal Water Quality in New England

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People are an important part of water quality analysis, but how can we capture that importance scientifically? With social science!

Coastal social science studies how humans interact with each other and their environment. Economics, anthropology, sociology, political science, and psychology are traditionally associated with social sciences. As social scientists at the US Environmental Protection Agency's Atlantic Coastal Environmental Sciences Division located on Narragansett Bay, Rhode Island, our interdisciplinary work focuses on both the ecological effects and social implications of water quality concerns. Here we pose questions that are important in coastal social science and describe how we have used science to address them.

How can we estimate how many people are recreating on our coasts?

Understanding how many people use recreational waters, how they use and perceive these waters, and who they are is fundamental to understanding the social impacts of changing water quality. We devel-

oped methods to estimate visitation to coastal access points. These methods included physically counting people and extrapolating counts to visitors for a day and season;^{1,2} statistical modeling of participation rates and days spent recreating using data from a public survey;³ and

using anonymized cell-phone location data to estimate total visitors.^{4,5}

We used these data to predict the daily, monthly, and annual number of visits to coastal areas (Fig. 1);³ work with partners to visualize coastal recreation;⁶ and document the effect of bacterial closures on beach

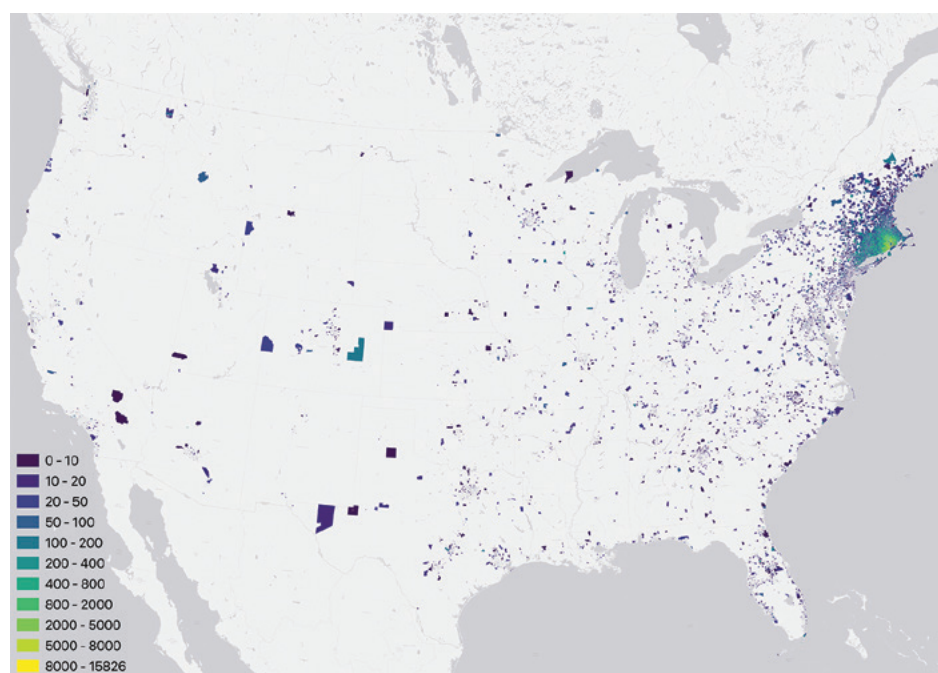


Fig. 1. Count of visitors by census block group to all of Rhode Island's coastal water access points for the summer of 2019 as identified through the cell-data methods. More came from nearby, but some visitors came from across the country

visits.⁵ We also determined that the use of a small estuary via many small access points is comparable to that of one of Cape Cod's popular beaches.¹

How can we determine the value of water quality to coastal recreators?

We estimated the non-market economic value—what a person is willing to pay beyond the actual cost—of a coastal recreation visit, and how

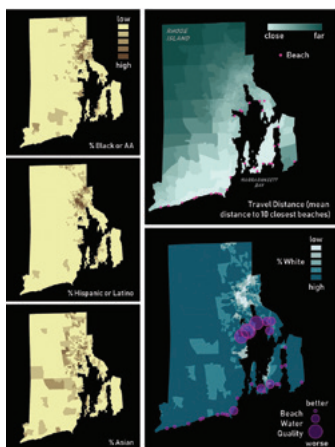


Fig. 2. Overlay of beach water quality with racial demographics. Data sources: U.S. Census American Community Survey (ACS) 5-Year Data Profiles, 2012–2016, Rhode Island Department of Environmental Management 2014 303(d) estuarine impaired water body listings, Rhode Island Department of Environmental Management 2017 shellfish harvest waters classification, and Rhode Island Department of Health 2012–2016 swimming beach bacteria closures

that value varies with changes in water quality. Initially, we used a meta-analysis of existing studies to estimate the value of a lost beach day due to bacterial closures.⁷ We also sent a mail survey to elicit data about coastal use and to estimate recreationists' willingness to pay for visits to coastal access points with varying water quality. We used this to calculate the recreation benefits from improvements in coastal water clarity or bacterial counts.

Is access to clean waters equitable?

Access to coastal areas and clean recreational waters improves qual-

ity of life but the benefits are not equitably distributed. Using geospatial analysis, we found that Black and Hispanic/Latinx populations in Rhode Island live farther from coastal access and areas with the best water quality (Fig. 2).⁸ Ongoing projects are estimating differences in recreational uses and experiences of water quality based on race/ethnicity and income and documenting the state of research on environmental justice in coastal waters.

We know coastal water quality is valuable to people, but how willing are they to be part of the solution?

To meet water policy objectives, local and state governments have many pollution mitigation options. Through interviews with government, industry, and nongovernmental experts, we identified barriers and opportunities for different technologies. Cost and technical capacity to reduce nitrogen were the most common considerations.⁹ We also modeled benefits from different interventions over time based on groundwater travel time and costs. We found there may be valuable alternative approaches to address legacy nutrient pollution, and that shellfish harvesting is a small-scale, yet valuable, contribution to addressing the problem.¹⁰

In many communities, individual homeowners are responsible for implementing practices, such as installing advanced septic systems. Our team conducted focus groups with installers and prospective installers of innovative alternative septic systems to elicit their key considerations and how those play into the final decision of whether to install these nutrient-treating systems. We found that the factors that played the largest roles in installation were environmental values of homeowners, system costs and financing, and requirements to install.¹¹

How can we better engage with the

public to meet water quality goals?

To better produce research that meets community needs, we need to improve public engagement. There is a science to this, the "science of science communication." Using many of the methods described above, our team has investigated the experi-



Fig. 3. Social science researchers (middle) interviewing recreators about their perceptions of harmful algal blooms at a freshwater pond in Rhode Island

ences of researchers, local government employees, and practitioners to understand which engagement methods are working, and which need to shift.^{12,13,14} This work helped us to adaptively develop and implement recommendations to improve researchers' and stakeholders' experiences in community-engaged research. To reach nonacademic audiences, we have shared findings through reports¹⁵ and numerous social media and print communication tools. Ongoing work addresses perspectives on bog restoration, risk communication of freshwater harmful algal blooms (Fig. 3), and communication about nutrient management.

Summary

Humans are the cause of water quality degradation in coastal systems but are also the solution. Our work captures the social benefits of improving water quality as well as the management and communication opportunities and barriers to doing so.¹⁶ Building a clearer picture of how to better engage people and

implement solutions will enable better management, ultimately helping us meet water quality goals. This clearer picture must include the work of social scientists, like those in our lab, to better understand these needs.

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A Nelson's Sparrow (*Ammodramus nelsoni*) sits tucked away and hidden amongst the salt marsh grasses Photo: Karen Aerni

Estuarine & Coastal Sciences Association (ECSA) Celebrates 50 Years

John Humphreys
ECSA President-Elect
Sally Little
ECSA President
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In October 1971, what is now the Estuarine and Coastal Sciences Association (ECSA) was inaugurated at a symposium in London and marked by the publication of a volume of proceedings entitled *The Estuarine Environment*.¹ To celebrate the 50th anniversary of the association, we decided to follow the lead of the original ECSA council by holding a wide-ranging one-day conference and publishing a volume of proceedings on estuarine and coastal science. Although the Covid pandemic interfered with our aspirations, we could not allow such an important milestone to go uncelebrated and so last year three events marked our anniversary: a small celebratory conference in London; a volume of contributions from eminent specialists published as the book *Challenges in Estuarine and Coastal Science*; and a

larger celebration at our international conference ECSA 59 in San Sebastian, Spain.

The London 50th Anniversary Conference

Our one-day celebratory conference took place at the prestigious Fishmongers Hall on the banks of the Thames estuary in the heart of London. Restricted to 50 attendees, the conference program featured many eminent speakers of note including Professor Robert Nicholls, Director of the Tyndall Centre for Climate Change Research at the University of East Anglia, and Professor Colin Moffatt, recently Chief Scientific Advisor Marine to the Scottish Government.

Collectively the presentations encapsulated many of the issues and challenges facing estuarine and coastal

environments today, from plastics to climate change. As if to emphasize the impacts of climate change, on the day of the conference northwest Europe suffered an intense cyclone (Storm Eunice) which set a new record for the strongest wind ever recorded in England at 196 km/h. Despite the UK government's advice against travel, 32 people, including our keynote speakers, made it to London, often setting off the previous day. Thanks to the wonders of Zoom, those who could not make it (including our own President!) were able to participate, meaning that we had our full complement of attendees and an interesting and authoritative conference.

We owe particular thanks to our sponsor, The Fishmongers' Company, Fisheries Charitable Trust, and in particular Dr. Eleanor Adamson.



Fishmongers Hall, London, viewed from London Bridge



In-person attendees at the 50th Anniversary Conference in London

ECSA 50th Anniversary Volume: Challenges in Estuarine and Coastal Science²

Published to mark ECSA's 50th anniversary, this book has been written and compiled for practitioners, academics, and students in the field of coastal science and policy. Recognizing estuarine and coastal waters as acknowledged epicenters for anthropogenic impacts, the book examines and exemplifies the range of current and future challenges. From upper estuaries to open coasts and adjacent seas; from tropical to temperate latitudes; and from Europe to Australia, the chapters address:

- Coastal erosion and deposition from open shores to estuaries and deltas
- Marine plastics with special reference to estuaries and coasts
- Sea level rise, coastal and estuarine squeeze, and habitat loss
- Transitional waters, saline incursion, and estuarine squeeze
- Restoration management using remote data collection
- Carbon storage in coastal wetlands and intertidal areas
- Species distribution and the arrival of non-natives
- Shorebirds: Modelling environmental change
- Physical processes: Tidal dynamics, residence times, and sediments
- Estuaries as fish nurseries

- Policy versus reality in coastal conservation

The book also contains a prologue by founding member Professor Richard Barnes (who co-edited ECSA's 1972 equivalent volume), and a short history of the association. These, along with the other contributions provide the basis for an overarching examination of "Trajectories and Challenges" in a final concluding chapter.

Since publication, the book has been positively reviewed with comments including:

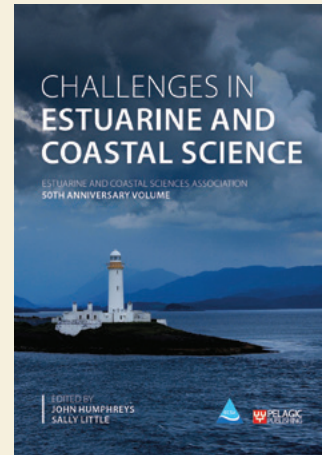
"... should be carefully considered by anyone whose career or livelihood is linked to these precious ecosystems ... We can only hope that governments will take heed of the contents of this special volume." The Biologist Vol 69(4)

"... the authors provide an excellent summary of where we currently stand and in doing so provide a guide to the relevant reference material that will be of great benefit to both students and practitioners alike ... well worth a careful read." The Marine Biologist October 2022

The book is currently available to ECSA members at a 30% discount. Purchase through www.pelagic-publishing.com using the ECSA30 discount code.

ECSA 59, San Sebastien, Spain

Our final celebrations took place at



ECSA 50th Anniversary Volume: Challenges in Estuarine and Coastal Science

our September 2022 international conference ECSA 59 in San Sebastian, Spain, attended by over 400 delegates from over 40 countries. In addition to a fantastic programme of presentations, our founder member Professor Richard Barnes spoke about his recollections on the conception and birth of the association.

Special thanks to: Angel Borja of AZTI, our host and conference chair in San Sebastian; Tim Jennerjahn, ECSA Council member for conferences; and Marie-Claire Morley and colleagues from Elsevier, our publishing and conference partners.

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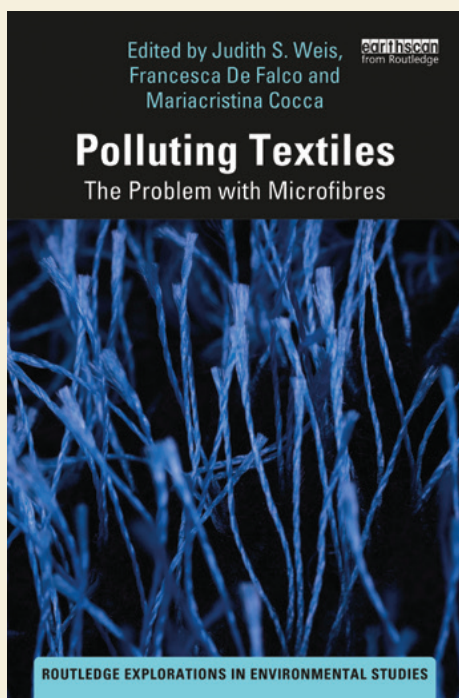
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The ECSA 50th anniversary event held during ECSA 59 with Professor Barnes front centre, wearing cap, tee-shirt, and shorts

Microfiber solutions at your fingertips! A review of “Polluting Textiles: The Problem with Microfibres”

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As headlines appear almost daily now, so too has a growing awareness of the problem: Microfibers have found their way into our food, air, water, and wildlife, and are now detectable in the farthest reaches of our planet. As that awareness (and alarm) has grown, so has ability to identify and quantify these tiny pollutants. While the discoveries are discouraging, there is also hope because this worldwide problem can be tackled with local solutions. A

book, *Polluting Textiles: The Problem with Microfibres* (2022), offers crucial, up-to-date information on the scope of the problem while highlighting the most recent approaches and solutions to global textile microfiber pollution.

The book's introduction provides a useful roadmap and accessible overview of the textile microfiber problem and solutions. It includes a handy chapter-by-chapter synopsis that reflects the diverse knowledge of the expert contributors who span disciplines—from environmental to material sciences—presenting the methods, problems, and solutions surrounding textile microfiber pollution, specifically in aquatic ecosystems.

As awareness of microfiber pollution has grown, so has the development of a wide variety of different methods used to identify and quantify them. This book provides a concise yet complete overview of the most accepted microfiber detection and identification methods including the associated trade-offs with each method, to inform decisions about which methods may be most appropriate given particular research questions.

The problem of microfibers, including the causes, pathways, fates, and impacts in aquatic systems are complex, but the authors distill the latest science in an understandable way. They highlight key findings on uptake, transfer within and between organisms, fates and effects of microfibers and associated chemicals; and identify important information gaps.

The second half of the book is dedicated to sustainable solutions with background information and mitigating approaches discussed for each step along the textile life cycle. These include steps from production to use to end-of-life possibilities including the latest on degradation, reducing leakage during laundering and wastewater treatment, and potential policies that can reduce pollution at each stage.

Polluting Textiles is a worthwhile resource that puts comprehensive information underlying textile fiber pollution into the hands of students learning about the issue, researchers committed to elucidating the complex problem and potential solutions, and decision makers from all sectors and backgrounds looking to make better informed decisions.



CERF Receives National Science Foundation Culture Change Award

*The CERF 2017 Rising TIDES Conference
Program scholars and mentors*

We are excited to announce that CERF has received an award from the National Science Foundation (NSF Award #2233699) through its new Leading Culture Change Through Professional Societies of Biology program. This four-year, US\$2M grant, Changing the Culture of our Occupations to Achieve Systemic Transformation (C-COAST), will support an expanded Rising TIDES (Toward an Inclusive, Diverse, and Enriched Society) conference program and the new CERF Inclusive Leadership Program (CILP).

Rising TIDES will become a 16-month program providing full travel support and a stipend to students and early career professionals from marginalized backgrounds to attend the CERF conference, an Affiliate Society meeting, and the Restore America's Estuaries Summit. Scholars will be provided with mentorship, professional development, and networking at in-person events. Rising TIDES alumni will be fully supported to participate as near-peer mentors, and professional mentors will also be provided with partial financial support. Many exciting opportunities will be available through this program, including training on inclusive mentoring by Beronda Montgomery, and diversity, equity, and inclusion workshops open to all CERF conference attendees. There will be two cohorts, each with 20 scholars, five near-peer mentors, and five professional mentors. The 2023–2024

Rising TIDES program participants will be announced in early July.

The CILP will promote culture change through leadership training for current and future leaders in CERF disciplines. The program will build a dynamic learning community with group mentoring to prepare emerging leaders to become agents of change while helping current leaders use their power to address systemic inequities. Through the CILP, future leaders will receive training and mentoring to close the confidence gap that forms on the path to leadership and will be equipped with skills needed to become leaders. Simultaneously, we will train and empower current leaders to make progress towards broadening participation. The CILP will have integrated cohorts of early-, mid-, and late-career professionals to enable cross-mentoring in a generative space where new ideas can be born, and new skills and competencies can be learned across peer groups. The program will include two in-person meetings and several virtual trainings, coaching sessions, and discussions. There will be two cohorts of 10 participants. This year-long program will kick off this summer.

There will also be joint activities and trainings between Rising TIDES and the CILP, including an in-person social and emotional intelligence workshop and a virtual mental health first aid training.

C-COAST will be led by CERF Executive Director Susan Park, who serves as the principal investigator (PI). Co-PIs include Kristin Wilson Grimes (University of the Virgin Islands, CERF board member, Inclusive Culture Council [ICC] co-chair), Leila Hamdan (University of Southern Mississippi, CERF President, ICC member), Kristy Lewis (University of Central Florida, CERF 2023 Inclusive Culture Committee co-chair, ICC member), Jennifer Sandoval (University of Central Florida), Christine Whitcraft (California State University Long Beach, CERF 2023 Scientific Program Committee [SPC] co-chair, ICC member), as well as advisors Treda Grayson (US EPA, CERF board member, ICC co-chair, CERF 2023 SPC co-chair), Hilary Neckles (USGS retired, CERF past president, ICC member), Drew Talley (University of San Diego, CERF 2023 SPC co-chair, ICC member), and Allison Fitzgerald (*CERF's Up!* Editor, CERF 2023 committee member, ICC member). These individuals represent five minority-serving institutions, two primarily undergraduate institutions, and three NSF EPSCoR jurisdictions. In addition, a program coordinator will be hired to support all aspects of C-COAST.

We look forward to engaging with additional CERF members to help us in all aspects of C-COAST. Please contact Susan Park (spark@cerf.science) and watch the CERF Inclusive Culture website¹ for more information.

¹ <https://www.cerf.science/inclusive-culture>



CERF 2023

27th Biennial Conference

12-16 Nov. 2023 / Portland, OR

IMPORTANT DATES

- **Student Travel Awards Applications:** 1 May - 16 Aug. 2023
- **Late-Breaking Poster Submissions:** 3 Aug. - 18 Aug. 2023
- **Early Bird Online Registration:** 3 May - 15 July 2023
- **Regular Online Registration:** 16 July - 23 Oct. 2023
- **Onsite Registration:** 12 - 16 November 2023

Learn more at:
conference.cerf.science



CERF 2023–2025 Governing Board Election Slate

We invite you to make your voice heard in the future of the federation. Voting is now open for the 2023–2025 CERF Governing Board to elect our next President-Elect, Secretary, two Members-at-Large, and a Student Member-at-Large. The candidates are listed below; their full bios and statements are available online.¹

An online voting form was sent to all eligible voting members. Please remember to submit your vote by 29 June 2023.

These dedicated CERF members have considered how they can best contribute to the future of the federation. We urge you to carefully review their statements and take time to vote on CERF's future leadership. On behalf of the current and future Governing Board members, thank you for your participation in this important election.

President-Elect

Neil Ganju, Research Oceanographer, US Geological Survey

Sharon Herzka, Research Professor, Centro de Investigacion Cientifica y de Educacion Superior de Ensenada (CICESE)



Neil Ganju
President-Elect



Sharon Herzka
President-Elect

Secretary

Lillian Aoki, Research Scientist, University of Oregon

Xinping Hu, Chair for Ecosystem Science and Modeling, Harte Research
Institute for Gulf of Mexico Studies, Texas A&M University - Corpus Christi



Lillian Aoki
Secretary



Xinping Hu
Secretary

Member-at-Large (two open positions)

Cassandra Armstrong, Coastal Ecosystem Section Administrator, South Florida Water Management District

Allison Fitzgerald, Associate Professor of Biology, New Jersey City University

Jan Walker, Ecologist, Southern California Coastal Water Research Project

Benjamin D. Walther, Associate Professor, Texas A&M University - Corpus Christi



Cassandra Armstrong
Member-at-Large



Allison Fitzgerald
Member-at-Large



Jan Walker
Member-at-Large



Ben Walther
Member-at-Large

Student Member-at-Large

Lucas Lamb, PhD Candidate, Florida International University

Sommer Starr, PhD Student, Florida State University



Lucas Lamb
Student Member-at-Large



Sommer Starr
Student Member-at-Large

CERF 2023 Conference

Registration

Please join us at the CERF 2023 conference in Portland, Oregon, USA, 12–16 November 2023, to network, celebrate our work, learn from each other, and grow within our amazing field as we endeavor to connect science and society with collective goals of preserving coastal and estuarine habitats, resources, and heritage. To register for the 27th Biennial CERF Conference, please visit conference.cerf.science. You may also scan the QR code to go directly to the registration page. When you register, don't forget to sign up for workshops, field trips, and other amazing programs that we have available for 2023.



Workshops

All workshops will take place on Sunday, 12 November.

Adapting Technology for SAV Mapping and Monitoring

1:00 PM – 5:00 PM | \$52 Regular Price | \$36 Student Price

This workshop will share presentations on emerging technologies by invited experts with opportunities for participants to explore how they can be applied operationally and information on best practices that have been shown to be operationally effective and efficient. The workshop will be coordinated by the SAV Mapping/Monitoring Community of Practice (CoP) and continue a long history of similar workshops at CERF. In addition to the information shared during the workshop, participants will be provided with online resources and encouraged to continue the discussion on the online collaboration Discourse forum.

Application Tips and Tricks for Early Career Professionals

1:00 PM – 5:00 PM | \$52 Regular Price | FREE for Students

Applying to jobs and fellowships can be a daunting challenge for early career professionals; however, there are strategies you can use to develop a strong application package. Join NOAA Sea Grant and partners to gain hands-on experience drafting and submitting a competitive application package.

As part of our mission, Sea Grant

provides education and support throughout students' careers to create a diverse workforce representative of the demographics of our nation.

During the workshop, participants will gain hands-on experience with the application process from start to finish (reviewing the job/fellowship description, putting together a strong and competitive application, requesting letters of reference, communicating with program staff, submitting the application successfully and the interview process), and receive feedback from program managers that may help enhance the quality of student applications.

Dashboards: Using R to Create Actionable Science

9:00 AM – 5:00 PM | \$91 Regular Price | \$63 Student Price

The Shiny R package is now ten years old and is a popular tool to create immersive, web-based content. Although many coastal scientists have experience with R, expertise in dashboards is uncommon. This workshop will include a mix of instructor-led demonstrations, discussions, and exercises that will empower attendees to create their own Shiny applications. We will begin by showing what's possible with the Quarto publishing system and Shiny by demoing existing applications from the Marine Bio-

logical Observation Network and the National Estuary Program. We will then transition to instructional material on the fundamentals of reactive programming with Shiny. Recent additions and improvements to Shiny (e.g., drag-and-drop user interface development, Python integration) will also be demonstrated. The remainder of the workshop will involve hands-on exercises that will allow attendees to develop their own applications using data from the examples above.

Anyone interested in learning how to expand existing R skills for dashboard development will benefit from this workshop. This includes students, early career, and advanced professionals from any employment sector and field of expertise.

Tableau for Environmental Science: Easy Data Analysis, Mapping, and Sharing

9:00 AM – 5:00 PM | \$91 Regular Price | \$63 Student Price

Unleash the Power of Data Visualization with Tableau! Say goodbye to tedious data management and hello to powerful insights. Join us in this dynamic Tableau for Environmental Science workshop and discover new ways to explore and interact with your data. This workshop is packed with hands-on tutorials and interactive lectures that will take you from data preparation to creating

stunning visualizations, maps, and interactive online dashboards. Get a head start before the workshop by taking advantage of our provided resources, and during the workshop, let us guide you through challenges. Empower yourself with the tools to simplify data management and visualization and share your results with ease. Don't miss out on this opportunity to revolutionize your data presentation!

Fostering Inclusive Fieldwork Experiences

10:00 AM – 12:00 PM | \$26 Regular Price | \$18 Student Price

Across all disciplines, fieldwork can present unique challenges, such as working in remote locations or sharing accommodations. Whether you've recently entered the field, or you're managing large research groups, this workshop is for you! This two-hour panel and breakout discussion will cover best practices for fostering inclusive and safe field experiences among researchers and students of all identities. Topics will include field safety considerations; physical and financial access to field environments; accessible field equipment and attire; fostering an open and safe culture of dialog about concerns in the field; and potential steps for furthering inclusivity in your own work. To enrich our breakout discussions, attendees are asked to come prepared with a few examples of positive fieldwork experiences and/or successful strategies for enhancing inclusive fieldwork. Following the workshop, hosts will compile a resource document including the main takeaways from panelists and breakout discussions to be shared with all participants.

Removing Barriers for Students in CERF Disciplines: Tools for Advocacy

1:00 PM – 4:00 PM | \$39 Regular Price | \$27 Student Price

Broadening participation in CERF sciences begins with students and the allies who support them. But implicit assumptions and associated structural barriers limit the recruitment and retention of students with diverse identities and backgrounds. Encouragingly, many students and allies have begun taking action to identify and remove these barriers. In this workshop, we will take a focused look at structural barriers, advocacy, and actions taken by and for undergraduate and graduate students, faculty, and other professionals who support them.

This workshop will involve interactive activities, a panel discussion with invited speakers, and group discussions to highlight and share tools used in advocacy. Attendees will gain skills in identifying and describing structural barriers and learn about specific actions to remove barriers and improve participation in CERF sciences. Panelists will span multiple career stages, and discussions will include advocacy actions from all career pathways.

Food for Thought: How Coasts Nourish Our Bodies and Communities

9:00 AM – 12:00 PM | \$39 Regular Price | \$27 Student Price

This dynamic session will pair a live food demonstration with storytelling and moderated discussion on the intersections of foodways, culture, coastal communities, diversity, ecology, traditional ecological knowledge, equity, and accessibility. The panel will include community partners, researchers, and science extension specialists representing the Pacific Northwest region sharing their experiences of how food connects us to place, supports culture and commerce, can promote sustainable resource use, and reveals societal flaws.

Case studies and discussion are likely to touch on such important

questions as how can research inform policies to protect subsistence practices and help preserve traditional and/or local knowledge; how is food an indicator of healthy coastal ecosystems; and can we ensure equity in access to food while promoting new food-based commercial endeavors such as tourism?

Attendees will have the opportunity to leave behind their own stories of food and coastal culture as well as take home recipes and insights on food as an indicator of community well-being.

Study, Track, remOve & Prevent: Using Hands-On Marine Debris Surveys to Teach the Scientific Method

1:00 PM – 5:00 PM | \$52 Regular Price | \$36 Student Price

Study, Track, remOve and Prevent (STOP) is a survey method to gather data on types and abundance of litter. STOP consists of measuring a 100 ft (30 m) or less transect, picking up all trash larger than a cigarette butt in that area, then cataloging items. Participants enter surveys into online databases like the Texas Litter Database (txlitter.org) which is used by scientists for research. TEKS-aligned lesson plans are available that provide a brief lesson on litter, taking students through forming their own hypotheses and research questions, identifying dependent and independent variables, conducting the surveys, analyzing results, and proving/disproving their original hypothesis. Participants will leave with an understanding of the STOP method, walk through the scientific method lesson plan as a group, complete a tally of collected litter, and be shown how to enter results into pre-made Microsoft Excel sheets for classroom analysis. If conditions allow, we will conduct an actual survey/ litter cleanup near the conference venue so be prepared to get a bit trashy. All supplies will be provided.

Field Trips

All field trips will take place on Sunday, 12 November.

Portland Brewery Tour

12:00 PM - 3:00 PM | \$95 per person



Join us as we explore the breweries of Portland! The Portland Brewery Tour will include a behind-the-scenes look at the brewing process and tasting opportunities that can only be found in Portland.

Salmon River Estuary Tour

8:00 AM - 4:30 PM | \$40 per person



Salmon River Estuary

Travel to the mid-Oregon Coast to visit the Salmon River Estuary for a boat tour of the series of restoration projects that have been completed in the Salmon River Estuary over the last 45+ years. Discuss the restoration project and measurable returns of the fish stocks in the estuary with key organizers and fish researchers.

Cascade Head Hike

8:00 AM - 4:30 PM | \$40 per person



Cascade Head

Travel to the mid-Oregon coast for a hike of the Cascade Head trail with amazing views of the Salmon River estuary and Oregon coastline. The trail features a grassland habitat with rare plant communities and endangered butterfly species, permanently protected by The Nature Conservancy. This hike is 6.6 total miles (10.6 km) with about 1,310 feet (399 m) of elevation gain. Grab your hiking shoes and let's go!

Steigerwald Wildlife Rescue and Multnomah Falls

10:00 AM - 5:30 PM | \$45 per person



Multnomah Falls

Photo: Travel Portland

Join us for a trip along the beautiful Columbia River Gorge visiting waterfalls, a salmon and lamprey restoration project, and the Bonneville Dam fish ladder. This tour will drive along the historic Columbia River Highway, stopping at Multnomah Falls, and the Steigerwald National Wildlife Refuge.

Conference Mentorship Program

The CERF 2023 organizing committee is pleased to offer the Mentorship Program as part of the conference. The program will offer an orientation for first-time CERF Conference attendees and match mentors (mid- to late-career CERF attendees) with mentees (students, early-career professionals, and first-time CERF attendees). The purpose? To help students and early career participants benefit from the insights and guidance of "more experienced" CERF members.

While mentoring can be an extended relationship, our focus for CERF 2023 is the conference experience. In addition to one-on-one mentoring, CERF 2023 will offer unique opportunities for mentors and mentees to share time together and an orientation to help first-time attendees make the most of the conference. These opportunities include a first-time attendee orientation, welcome reception, and mentorship breakfast.

What does it mean to be a mentor or mentee?

Mentoring may sound like a serious endeavor, but all it means is giving advice, offering to listen, and/or being supportive to someone (mentees) using your own experiences to provide perspective or specific skill guidance.

Pre-conference

- Sign up when registering for the meeting as either a mentor or mentee.
- Exchange emails with one another prior to the conference (or communicate in some other way).

During the conference

- Be available to meet throughout the conference as suits each

mentor-mentee pair.

- Meet up at the Sunday evening Welcome Reception (12 November, 6:00 PM - 8:00 PM).
- Attend a Mentoring Program breakfast (13 November, 6:30 AM – 8:00 AM, Portland Ballroom), to meet and engage with each other over breakfast. Breakfast will include a short video about the benefits of mentoring.

Post-conference

- Follow up after the conference to address any questions or to continue engagement.

Who would be a great mentee?

YOU! The truth is that no matter what experience level you are, how old you are, or what your background is, everyone is always a mentee. You'll learn so much! Interacting with your mentor can be intellectually stimulating, grow your communication skills, and provide a different point of view about your science or career aspirations and opportunities. Never been to a CERF conference before? Looking to meet new folks and learn about all the great things CERF has to offer? Then becoming a mentee is right for you!

Who would be a great mentor?

YOU! You've been to CERF meetings in the past. You remember being excited, nervous, or even anxious about being surrounded by lots of people you didn't know. There is always someone who will attend the meeting who could benefit from your



Mentors and mentees listen to mentorship advice from Ashanti Johnson during a breakfast presentation Photo: Susan Park

experience. Everyone has gifts and talents to share. Strengthen the lessons you've already learned and see CERF through another's eyes. You may build long-lasting relationships. You may end up with a new student, post-doc, colleague, or lifelong friend. Overall, you help build a more diverse and more vibrant Coastal and Estuarine Research Federation. Set the tone for the Federation by inspiring the next generation of leaders and scientists as a mentor for CERF 2023!

For more information about the Mentoring Program, please Geno Olmi (geno.olmi@noaa.gov), Allison Holevoet (ajholevoet@gmail.com), or Andrea Stumpf (andreacstumpf@gmail.com).

Student and Early Career Participation Awards

CERF provides participation grants to support undergraduate students, graduate students, and early career members attending and presenting at CERF 2023. Students, individuals within one year of graduation and actively seeking employment, and early career professionals in need of financial assistance to attend the 2023 Conference may apply. To be eligible for a travel award, you must be a CERF member. The deadline to apply is 16 August 2023. Visit <https://conference.cerf.science/2023-student-early-career-participation-awards> for more information!

Sponsorship Opportunities

The CERF Biennial Conference attracts a diverse crowd of multidisciplinary coastal and estuarine scientists and managers. These attendees are recognized as community leaders and have significant influence and purchasing power in a variety of markets. We expect over 1,500 attendees from across North America and over 25 other countries, bringing a wide range of experience, expertise, and backgrounds to the conference. Your sponsorship message will reach this active and engaged audience, including academics; employees from the non-profit,

private industry, and government sectors; and talented students and early career professionals. It's a great opportunity to educate the coastal and estuarine science and management community about your organization and initiatives, recruit new employees or students, or reveal your newest and most innovative technology or tool. We hope you will take a moment to consider sponsoring this exciting educational event. The sponsorship prospectus and sponsor and exhibitor sign-up are available at <https://conference.cerf.science/sponsorship-opportunities>.

Visions V: 2023–2026 CERF Strategic Plan

CERF's Strategic Goals:

1. **Advocate for Estuaries and Coasts.** Address global coastal and estuarine ecosystems challenges and opportunities by advocating for the use of sound science in policy and management.
2. **Enhance Member Value.** Be the first choice for education, career advancement, volunteer engagement, and networking for estuarine and coastal professionals at all stages of their careers.
3. **Promote and Support Equity and Justice.** Foster greater diversity, equity, inclusion, justice, and accessibility (DEIJA) in science and management and ensure that DEIJA is considered in all the work of CERF.

Our goal is that by 2026, CERF and its members will be at the center of the world's most urgent conversations regarding the science, management, and stewardship of estuarine and coastal ecosystems. CERF is globally recognized for bringing together a diverse community of individuals dedicated to addressing the challenges we face and providing research and knowledge to support management and policy decisions. CERF is the first organization individuals turn to when they seek to advance their careers, expand their knowledge, and ensure their efforts to solve challenges associated with coastal and estuarine ecosystems can be accomplished.

-
1. **Advocate for Estuaries and Coasts.** Address global coastal and estuarine ecosystems challenges and opportunities by advocating for the use of sound science in policy and management.
 - Promote the application of research and science to the benefit of coastal and estuarine communities.
 - Make scientific and research findings accessible and understandable to the public and key decision makers.
 - Help professionals in the field contextualize work for greater understanding and impact.
 - Develop and translate knowledge for policy- and management-directed action.
 - Collaborate with affiliate societies and other scientific societies to address current, local, regional, national, and global challenges to amplify our voices.
 - Identify and collaborate with coastal communities that are underrepresented, frontline, and facing environmental justice challenges to promote the co-production of research.

Objectives

- Improved estuarine and coastal health and increased resilience to climate change and other anthropogenic stressors.
 - Increased influence on and engagement with policy makers and decision makers.
 - Mobilization of science into local, regional, national, and international policy.
 - Establishment of CERF as a trusted, reliable, and authoritative source for scientific research and information related to the management and stewardship of estuarine and coastal ecosystems.
 - Expanded CERF membership.
 - Increased connection to and confidence in CERF policy work among members.
 - Demonstrated benefits of research to coastal communities.
 - Increased awareness and engagement of CERF with the larger scientific community, practitioners, educators, decision makers, advocacy groups, traditional and local knowledge makers, and the public.
2. **Enhance Member Value.** Be the first choice for education, career advancement, volunteer engagement, and networking for estuarine and coastal professionals at all stages of their careers.
 - Support progression within the field that benefits members across all career stages, pathways, and transitions with educational resources based on goals, needs, and values.
 - Develop or enhance training and education programs focused on key underserved audiences.
 - Use a variety of technological solutions to increase knowledge sharing, collaboration, mentorship, and professional growth.
 - Connect, convene, and collaborate with affiliate societies and other local and regional groups to conduct research, deliver education, and create a greater sense of community and belonging.
 - Grow a robust online collaborative community of individuals who can assist in peer-to-peer learning, knowl-

edge sharing, and networking.

- Improve accessibility to CERF education, tools, mentoring, and resources.
- Examine and adjust CERF's business model to ensure individuals and organizations can engage in ways that are most meaningful and relevant to them.
- Provide training in business and leadership skills to prepare members for diverse careers and transitions.
- Increase opportunities for students and those from underfunded and underrepresented groups to attend CERF programs and events.
- Develop a communication strategy to inform and engage membership in CERF's policy, management, education, and DEIJA work.

Objectives

- Increased number of students and early-career professionals who join CERF and remain members throughout their careers.
- Enhancement of a more civic-minded and welcoming community within CERF.
- Improved financial stability and solvency.
- Increased membership across multiple career types, including managers and decision makers.
- Increased engagement of volunteers; increased participation in CERF programming and contributions.
- Increased member satisfaction, retention, and referrals.
- Development of new programs and acquisition of new technology to support members throughout their careers.

3. **Promote and Support Equity and Justice.** Foster greater diversity, equity, inclusion, justice, and accessibility (DEIJA) in the coastal and estuarine research, management, and policy communities and ensure that DEIJA is considered in all the work of CERF.

- Incorporate DEIJA into all aspects of the work of CERF by increasing access and identifying and reducing barriers that lead to disparities.
- Elevate and enable equity by identifying and creating transparent pathways to volunteer positions within CERF, including leadership positions.
- Work with affiliate societies to better connect to minority-serving institutions, two-year colleges, and local community organizations.
- Establish CERF as a DEIJA leader through publications and other product development, and implement methods to track, measure, and hold the organization accountable for these efforts.
- Improve capacity for translating and communicating research to different audiences.
- Curate and provide DEIJA training programs, resources, and support through CERF offerings.
- Create inclusive practices at conferences and events to foster a welcoming environment.
- Expand and improve existing programming focused on broadening participation in coastal and estuarine science, management, and policy.

Objectives

- Increased CERF leadership in supporting underserved and underrepresented coastal communities.
- Strengthened agency of affiliate societies in the DEIJA space and connections with the community.
- Recruitment and retention of a broader workforce that feels welcome and included in the advancement of science, management, and policy related to coastal and estuarine ecosystems.
- Doubled membership of non-white members in four years.
- Continued efforts to increase diversity beyond race and ethnicity.

Reaching our goals

The implementation of this strategic plan will require the development of specific actions and timelines to achieve the stated goals and outcomes, as well as metrics to assess success. The Governing Board and its committees will develop detailed work plans guided by this plan and review and adjust them on a semi-annual basis as goals are achieved and conditions change. Over the four-year lifespan of the strategic plan, the Governing Board will routinely review it to ensure that it remains relevant and responsive to the needs of our community.

Upcoming Events

Society of Wetland Scientists 2023 Meeting

27–30 June 2023

<https://na.eventscloud.com/website/50365/home/>

American Fisheries Society 153rd Annual Meeting

20–24 August 2023

Grand Rapids, Michigan

<https://afsannualmeeting.fisheries.org/>

2023 RAE Living Shorelines Tech Transfer Workshop

24–25 October 2023

Galveston, Texas

<https://estuaries.org/living-shorelines/2023-living-shorelines-workshop/>

CERF 2023 Conference

12–16 November 2023

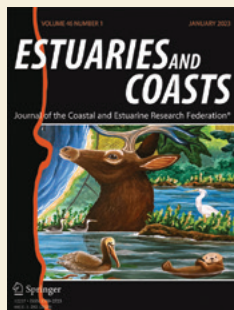
Portland, Oregon

<https://conference.cerf.science/>

Estuaries and Coasts Editors' Choice Papers

Linda Deegan, co-Editor-in-Chief

Paul Montagna, co-Editor-in-Chief



March 2023

Greening, H.S., et al. 2023. Assessing the Effectiveness of Large-Scale Environmental Restoration: Challenges and Opportunities. *Estuaries and Coasts* 46 (2): 293–301.

<https://rdcu.be/c9wFA>

May 2023

Raposa, K.B., et al. 2023. Evaluating Thin-Layer Sediment Placement as a Tool for Enhancing Tidal Marsh Resilience: a Coordinated Experiment Across Eight US National Estuarine Research Reserves. *Estuaries and Coasts* 46 (3): 595–615.

<https://rdcu.be/c9wFQ>

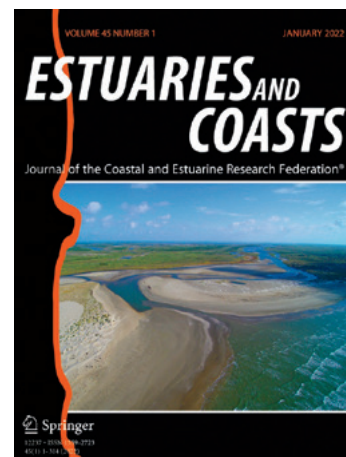


Submit your Management Applications papers to

Estuaries and Coasts!

Estuaries and Coasts, the official journal of CERF, accepts Management Applications manuscripts.

These papers demonstrate the application of estuarine and coastal research to address contemporary estuarine and coastal management, socioeconomic, and policy issues. The underlying science is expected to be at the level of Original Reports, but illustrations and case studies of how findings can be used to address real-world problems are emphasized.



More information, including instructions for authors, can be found at
<http://www.springer.com/environment/journal/12237>

The Latest Coastal & Estuarine Science News (CESN)

Merryl Alber, Managing Editor

Janet Fang, Science Writer/Coordinating Editor

CESN is an electronic newsletter that is put out on a bimonthly basis (six issues per year) and serves as a companion to the journal *Estuaries and Coasts*. Each issue of CESN provides a summary of four articles from the journal, written for an audience of coastal managers and other interested stakeholders and emphasizing the management applications of scientific findings. Issues are posted online and emailed to subscribers. Go to the CESN website at www.cerf.science/cesn to read the full summaries and sign up to have future issues delivered to your email inbox.

June 2023 CESN

Is Large-Scale Environmental Restoration Possible?

Recommendations from hundreds of Gulf of Mexico projects

Source: Greening, H.S. et al. 2022.

Assessing the Effectiveness of Large-Scale Environmental Restoration: Challenges and Opportunities.

Estuaries and Coasts. DOI: 10.1007/s12237-022-01149-8. <https://rdcu.be/c4an0>
<https://cerf.memberclicks.net/cesn-2023-issue-2#Article1>

How Surge Barriers Change Estuary Dynamics

Modeling the impacts of flow alterations to sediment dynamics in the Hudson

Source: Ralston, D.K. 2023.

Changes in Estuarine Sediment Dynamics with a Storm Surge Barrier.

Estuaries and Coasts. DOI: 10.1007/s12237-023-01172-3. <https://rdcu.be/c5mqV>
<https://cerf.memberclicks.net/cesn-2023-issue-2#Article2>

TLP: Techniques, Limitations, and Potential

Can thin-layer sediment placement enhance marsh resilience?

Source: Raposa, K.B. et al. 2023.

Evaluating Thin-Layer Sediment Placement as a Tool for Enhancing Tidal Marsh Resilience: a Coordinated Experiment Across Eight US National Estuarine Research Reserves.

Estuaries and Coasts. DOI: 10.1007/s12237-022-01161-y. <https://rdcu.be/c4an9>
<https://cerf.memberclicks.net/cesn-2023-issue-2#Article3>

The Cryptic Invasion of Non-Native Cattails

Recognizing invasive Typha in a British Columbia estuary

Source: Stewart, D. et al. 2023.

Undetected but Widespread: the Cryptic Invasion of Non-Native Cattail (*Typha*) in a Pacific Northwest Estuary.

Estuaries and Coasts. DOI: 10.1007/s12237-023-01171-4. <https://rdcu.be/ddTDC>
<https://cerf.memberclicks.net/cesn-2023-issue-2#Article4>

A Mythological God of Estuaries?

Stephen S. Hale, Associate Editor
stephenshale@gmail.com

Throughout human history, many cultures around the world invented mythological gods to explain observed phenomena of their natural and human world. Greek and Roman mythology both have gods of the sky, forests, seas, rivers, and so on. But what about estuaries?

Of several possible sea god candidates, perhaps the best one for the estuaries job is Proteus, a Greek god whose father was Oceanus (oceans) and whose mother was Tethys (rivers).¹ Like estuaries that change with the tide and river flow, Proteus was changeable and could assume different forms.

Mythological gods are still with us today. They are found in scientific names for species (e.g., the genera *Amphitrite*, *Triton*, *Venus*). They have been used to name ships, ROVs, companies, software, and the moons of planets. They appear in classical literature and operas.

The word *proteus* means one who can easily change appearance, form, or character. Protean means being able to change frequently or easily. Proteus is the genus name of a bacterium and the specific name of an amoeba, a constant



Illustration of Proteus by Andrea Alciato from *The Book of Emblems* (1531)

shape-changer. Proteus is one of the gentlemen in Shakespeare's *The Two Gentlemen of Verona*; he also appears in John Milton's *Paradise Lost*.

Proteus could answer any question, including those about the future. And he always told the truth. But he would change his shape to avoid answering, as he didn't like acting as a prophet. He had to be captured before he would talk. This is like what estuaries do to scientists trying to model them—estuaries change and can be elusive. Scientists build estuarine mesocosms to try to capture them and elicit their secrets.

So, if CERF was looking for a mythical god of estuaries as a symbol,

Proteus would be a good choice. His mitochondrial DNA reminds us of the importance of rivers in estuarine ecosystems. His ability to foretell the future and his adaptability could be inspirational as we struggle with predicting and addressing the consequences of climate change and biodiversity loss.



Proteus, son of Oceanus & Tethys (Ocean & River). Illustrations from *Historia Deorum Fatidicorum* by Pierre Mussard) Pitts Theology Library

1. More than one variation of the Proteus story appears in Greek mythology. For example, the father of Proteus in Homer's *Odyssey* was Poseidon

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