

CERF's Up!

Volume 52 • Number 3 • September 2026

Harbor Porpoise Sightings Help Protect Coastal Seas

CERF in Action: Coastal Mashup

Changes to CERF Elections Process



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



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Volume 52 • Number 3 • September 2026

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Front Cover: Saltmarsh at Clam Creek on Jekyll Island, Georgia, USA Photo: Joanne Dale

Back Cover: Great White Egret, Everglades National Park, Florida, USA Photo: Sherry Young

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



Sharon Herzka
CERF President

On 13 July, I signed and submitted CERF's [comment letter](#)¹ in response to the Office of Management and Budget (OMB) proposed rule on federal grant regulations ([Docket OMB-2026-0034](#)).² I wanted to explain why this mattered enough for us to weigh in, and what I think we should do next.

We didn't comment as a matter of principle alone. The proposed rule would have real, measurable consequences for our grants, our conference, our international membership, and our journal revenue.

We also aren't commenting from a place of theory. In 2025, our NSF-funded C-COAST award—a four-year, \$2 million grant—was terminated about halfway through, reportedly because it was flagged as a “DEI” project. We were given no scientific reason and no chance to appeal. That termination cost us an early-career staff position and left a workforce-development study half-finished. I used that experience directly in our comments, because it's exactly the kind of harm several of the proposed changes would make more common, not less.

Some of what's at stake, in brief:

- The proposal would require political appointees to pre-screen award content for alignment with administration priorities and allow agencies to terminate awards at will, with no hearings or appeals. We argued that this replaces peer review with political discretion, chills legally mandated broadening participation work (which America COMPETES and the CHIPS and Science Act require), and wastes money already spent on projects cut short.

- Our biennial conference draws about 1,400 people and is core to both our mission and our finances. The rule's free-speech provision is written broadly enough that it could bar our own code-of-conduct rules against disruptive behavior. The proposed conference pre-approval process would require selecting and justifying participation when submitting a proposal and is unlikely to work in practice—conference dates and locations usually aren't set years ahead, when most grants are written.

- As a scientific society with members, authors, and editors from covered foreign countries, we think the rule's blanket, indirect-cost-inclusive prohibition on foreign collaboration would chill legitimate scientific exchange without meaningfully protecting national security.

- *Estuaries and Coasts* is our only consistently profitable revenue line, and it subsidizes the conference and our other programming. Making membership dues, journal subscriptions, and open-access fees unallowable federal costs would hit that revenue and conflict with the 2022 Office of Science and Technology Policy open-access mandate.

What Happens Next

A note on this section: the summary below of how OMB must handle these comments was prepared with AI assistance and reviewed by me for accuracy.

Under the Administrative Procedure Act, OMB is required to read and grapple with the substance of significant comments, not just count them. OMB received roughly 55,000 comments on this docket. When it publishes a

final rule, it must explain in the preamble how it responded to major comments—and courts have struck down rules before when an agency ignored serious objections or reasonable alternatives, calling that “arbitrary and capricious.” Because our letter raised specific statutory conflicts, a concrete case study (C-COAST), and specific alternative language, it's the kind of comment that creates a real paper trail: OMB either must address it or risk a stronger legal challenge later.

OMB could also revise the rule enough that it must reopen the comment period—we'll be watching for that. Since this is a “significant” rule under Executive Order 12866, it's supposed to go through interagency review by the Office of Information and Regulatory Affairs (OIRA) before finalizing, though in this case that's a strange loop, since OIRA sits inside OMB. And once the rule is final, Congress has a window to pass a resolution disapproving it under the Congressional Review Act.

What CERF is Doing

We're a small organization—one employee—so our leverage comes mostly from joining forces with others rather than going at it alone. We're plugging into what other societies are doing; coalition letters carry more weight with OMB and Congress than any one of us alone, and we already have standing from our own letter.

Right now, Congress is the most useful lever. Congress limited similar changes through riders in the FY2026 appropriations bill, and members in both chambers have already called for this rule to be

withdrawn. I'd encourage anyone with a relationship to their member of Congress—especially if they sit on the Commerce-Justice-Science Appropriations Subcommittee, which funds NOAA and NSF—to reach out directly. The C-COAST story is the kind of concrete example that sticks with a staffer.

What You Can Do

- Contact your members of Congress, especially if they're on an appropriations or science committee. Ask them to use their oversight authority to slow or block this rule, the way the FY2026 riders did.
- Loop in your institution's government affairs or sponsored-programs office. Adding your name and your specific exposure to their advocacy helps them make a stronger case and gets you onto their action alerts.
- Keep an eye out for a reopened comment period. If OMB changes the rule enough, it'll have to ask for comments again—be ready to weigh in a second time.

• If you're comfortable, talk to a reporter or write something public. This rule is already getting real press coverage, and a researcher describing a concrete impact adds pressure that formal comments can't.

• Tell your own story instead of using a template. A delayed degree, a canceled grant, challenges to future conference scheduling or canceled planned attendance—those details land better with staffers and reporters than a form letter.

• If you hold or expect to hold a federal award, keep records of anything unusual—a delay, an added review step, a termination. OMB's earlier grant-pause memo was successfully challenged in court, and documentation like this could matter if a similar challenge follows this rule.

• Ask CERF, or any other society you belong to, to add your name to their coalition letters and action alerts. The more of us who show up on those lists, the more weight they carry.

A Few Useful Reads if You Want to Go Deeper

[Holland & Knight summary](#)³

[AAU resource page](#)⁴

[The Oceanography Society's tracker](#)⁵

Thank you for everything you do for this community—it's what makes comments like ours credible in the first place.

References:

1. https://cerf.memberclicks.net/assets/docs/2026/13_July_2026_CERF_Public_Comments_OMB.pdf
2. <https://www.federalregister.gov/documents/2026/05/29/2026-10817/regulation-for-federal-financial-assistance>
3. <https://www.hklaw.com/en/insights/publications/2026/06/omb-rule-proposes-significant-changes-to-federal-financial-assistance>
4. <https://www.aau.edu/resource-library/resources-proposed-revisions-omb-uniform-guidance>
5. <https://tos.org/omb-2026-0034>

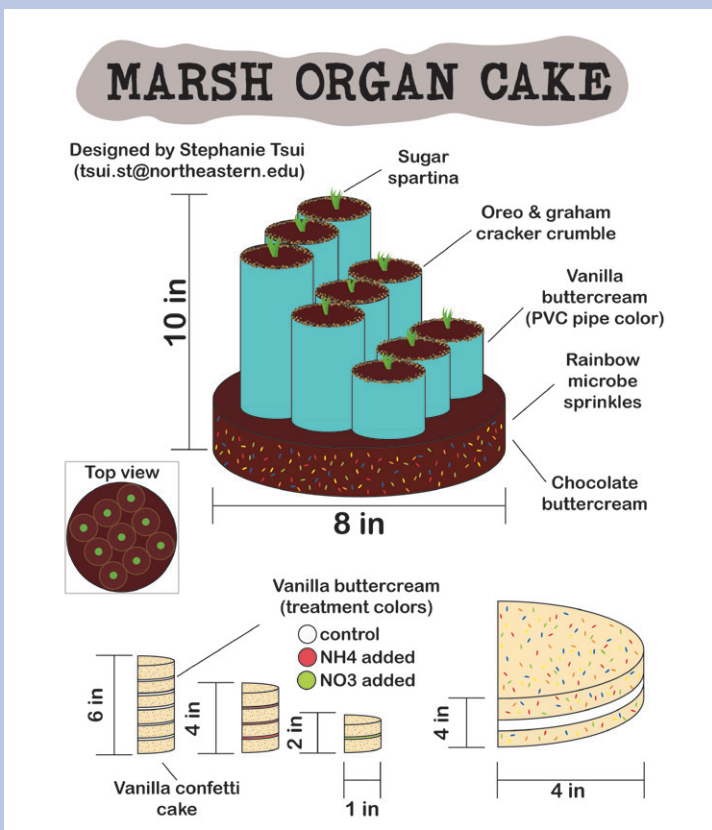
Marsh Organ Cake



Some people give cards as a going-away gift, but nothing says good-bye like an edible experiment. CERF member Stephanie Tsui baked her labmate, Dr. Matthew Costa, a cake replica of a marsh organ used to study the impacts of sea level rise, complete with elevation gradients, experimental treatments, sugar *Spartina*, Oreo-crumble soil, and rainbow sprinkles for microbial diversity. The results? Even Reviewer 2 agreed they were delicious! You can bake your own using Stephanie's schematic.

Above: The finished marsh organ cake Photo: Stephanie Tsui

Right: The cake schematic Image: Stephanie Tsui



From Ripples to Research: How Your Sightings of Harbor Porpoises Can Help Protect Our Coastal Seas

Cindy Elliser

Pacific Mammal Research, Anacortes, Washington, USA

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Photo: Cindy R. Elliser, Pacific Mammal Research

Scanning the water, you see a dark shape quickly surface and disappear. Perhaps all you see are the concentric ripples of water that indicate where the animal was, but not where it will be next. Their tiny dorsal fins barely break the surface as they move about their daily lives among the busy coastal waters.

What you saw was a harbor porpoise (*Phocoena phocoena*). At only 5-5.5 ft and roughly 150lbs, they are the second smallest cetacean (whales, dolphins, and porpoises) in the world, but one of the most commonly sighted along the northern temperate, sub-arctic, and Arctic coastal waters worldwide. Yet for being such a common species, we

know comparatively little about them, including distribution and movement patterns, ecology, behavior, and population structure. Quite simply, they are harder to study than other cetaceans due to their seemingly shy, elusive, and enigmatic nature. So they are often overlooked and underappreciated, even though as top predators they are good indicator species. Because they live close to shore and are sensitive to environmental changes, monitoring their health and behavior can act as an early warning system for overall coastal ecosystem health.

Pacific Mammal Research (PacMam, <https://www.pacmam.org/>) has been studying harbor porpoises in the

Salish Sea (inland waters of Washington State and Canada) on the West Coast of North America since 2014. Through photo-identification (photo-ID) and behavioral surveys at our land-based study site at Burrow's Pass, Anacortes, Washington, we are learning about this species through the lives of individual animals. PacMam was the first to publish that photo-ID can be used for long-term monitoring of individual harbor porpoises, and has one of the longest records of monitoring and site fidelity in the world. We know that harbor porpoises are resident to Burrows Pass, with some being sighted regularly for up to 11 years. Some calves show natal philopatry –



© Cindy R. Elliser
Pacific Mammal Research

Photo: Cindy R. Elliser, Pacific Mammal Research

regularly returning to Burrows Pass as juveniles and adults.

This monitoring also provides insight into their behavior. Along with colleagues around the world, we have documented their unique, often aerial, mating behavior. Males will approach females on their left-hand side, 100% of the time, and will often leap out of the water during the mating act. It is perhaps one of the only flashy things they do! We have observed different foraging techniques, from individual fish chases to herding bait balls in a group, and catching salmon, a species not previously known to be in their diet. And even then, bald eagles will try (and sometimes succeed) in stealing that salmon from them!

Interestingly, their behavior, distribution, and habitat usage patterns can vary at very small space and time scales. When and how they use one area may be very different from another, even if they are only a few miles (or less) apart. This highlights the complex relationship between habitat type, tidal cycles, and other oceanographic and biological fac-

tors that can affect the productivity of an area and subsequently the habitat usage patterns by harbor porpoises. This is particularly important for this species because they need predictable food sources. They live in cold waters and have a high metabolism, and can starve in a matter of days. This is an even stronger factor for reproductively active females who need significantly more calories, and who can be pregnant and lactating every year of their adult lives. Thus, understanding these relationships and habitat usage is vital for making conservation measures that are biologically meaningful to the animals.

We need your help to better understand this often cryptic species! PacMam has learned a lot about harbor porpoises in the last 12+ years, but that is just scratching the surface of what we need to know to protect them, and the coastal ecosystem they call home. We need more eyes on the water, beyond Burrows Pass, to expand our knowledge about their habitat use, behavior, and distribution in other areas. When you are out

on the coast, whether for research or pleasure, you can help us learn about harbor porpoises. If you are in or near the Salish Sea, in the US or Canada, help us out by downloading our sighting app, Epicollect5, and search for project: PacMam harbor porpoise. It takes just 1-2 minutes to fill out a sighting report (see more info here: <https://www.pacmam.org/sighting-app>).

The harbor porpoise is an underappreciated species, and there is more to them than meets the eye, if only we take the time to look. They are an important component of the coastal ecosystem, and a species that can help us keep tabs on overall environmental health. So the next time you are out on the coast, keep an eye out on the water, take a moment to appreciate these fascinating animals, and log a sighting for science!

Coastal Mashup

Kyle A. Capistrant-Fossa

Those who have recently published in *Estuaries and Coasts* (ESCO) may have noticed a new message in your acceptance email: "We want to help ensure your article is widely read! Please share a favorite photo or image related to your article through this form, and CERF will promote it via social media, the *CERF'S UP!* Bulletin, or other communication channels." Consider taking a few moments to fill out the form so that CERF can help feature the hard work that went into your recent ESCO publication! Here's a compilation of some recently published work by CERF members.

Modulation of Ammonium Release by Soil Hydro-Physical Properties Following Flooding Events in a Coastal Peatland

<https://doi.org/10.1007/s12237-026-01691-9>

<https://rdcu.be/fzgXe>

Miaorun Wang, miaorun.wang@outlook.com



Our research team during the filming of the ARTE documentary "Maritime Heritage: The German Baltic Coast," a moment when science meets storytelling

Photo: Mathias Haentjes



A photograph taken from the observation tower embodies the tranquility hikers seek: "Ruhe, einfach nur Ruhe" (peace, simply peace), featuring a fellow scientist during a field excursion. Our study investigated how coastal flooding affects nitrogen release in peatlands. We discovered that after salt-water floods, ammonium, a key nutrient, is not released uniformly. Instead, deeper soil layers in historically drained and rewetted areas act as hidden "hotspots," releasing much higher amounts due to their unique physical structure. Identifying these vulnerable zones is crucial for guiding restoration efforts and building resilience in coastal wetlands facing rising seas and stronger storms

Photo: Bernd Lennartz

Carbon Dioxide and Methane Emissions from Eutrophic, Vegetated Coastal Lagoons Potentially Offset Carbon Accumulation in Eelgrass Sediments

<https://doi.org/10.1007/s12237-026-01674-w>

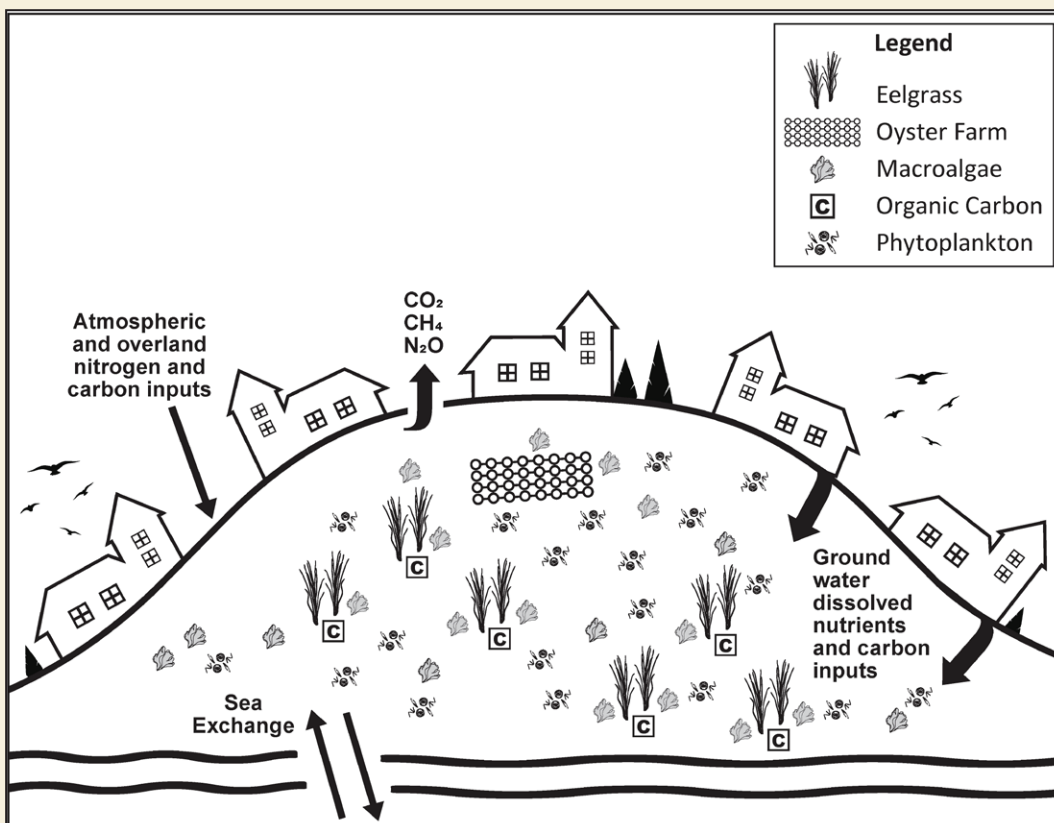
<https://rdcu.be/fzg30>

Cathy Wigand, cathywigandepa@gmail.com



Team members, Zan Beardwood and Don Cobb, sampling water and greenhouse gases in Rhode Island salt ponds. A floating chamber set by Don Cobb was used to measure greenhouse gases. The Picarro gas analyzer in the boat simultaneously measured carbon dioxide, methane, and nitrous oxide

Photo: Alexandra Beardwood



Nutrients enter coastal salt ponds from the sea, groundwater, and the atmosphere. Eelgrass and macroalgae are co-dominant producers in the eutrophic salt ponds, and phytoplankton was an important component of the system. Emissions of carbon dioxide (CO₂) and methane (CH₄) may potentially offset organic carbon associated with eelgrass below-ground production and sediment deposition

Image: Lisa Paine

Scaling the Spatial and Temporal Effects of Wrack Disturbance Across a Saltmarsh Landscape

<https://doi.org/10.1007/s12237-026-01721-6>

<https://rdcu.be/fzg9V>

Matt J. Pierce, matthew.pierce@uga.edu



A view of a long-term wrack-disturbed plot (marked by an orange flag) in Dean Creek marsh on the south end of Sapelo Island, Georgia, USA. The white PVC pipe is a sipper used to collect porewater samples within the wrack-disturbed area. The vegetation is Spartina alterniflora, and the water body is the Doboy Sound

Photo: Matt J. Pierce



Matt J. Pierce sampling a long-term plot to quantify marine macroinvertebrates and Spartina alterniflora metrics in January 2022. This picture was taken in Dean Creek marsh on the southern end of Sapelo Island, Georgia, USA Photo: Kate Moore

Notice of 2026 Annual Business Meeting

CERF will hold its Annual Membership & Business Meeting on Friday, 16 October 2026, at 10:00–11:00 AM EDT. This will be a virtual meeting held over Zoom. All members are invited to attend. If you would like to attend, email info@cerf.science to receive the Zoom link to the meeting.

Penguin Colony–steppe Divergence Shapes Coastal Small Mammal Assemblages and Enhances Regional Diversity

<https://doi.org/10.1007/s12237-026-01710-9>

<https://rdcu.be/fbglP>

Hilton Entringer Jr, hiltonentringer@hotmail.com



Photos: Hilton Entringer Jr

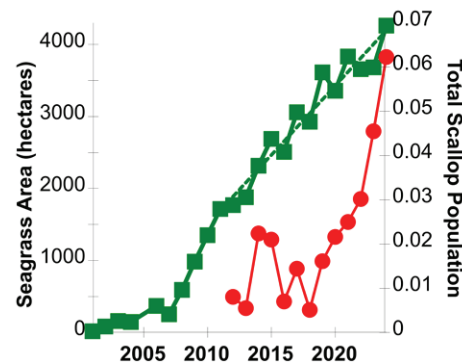
Camera-trap and live-trap records of small cricetid rodents within a Magellanic penguin colony and the surrounding steppe in coastal Patagonia. These images illustrate the interface between marine-derived resources and terrestrial fauna, highlighting penguin colonies as ecological hotspots that increase small mammal detection and reshape community structure and biodiversity at a regional scale

Restoration of a Mid-Atlantic Coastal Bay Scallop Population (*Argopecten irradians*)

<https://doi.org/10.1007/s12237-026-01774-7>

<https://rdcu.be/fzhcA>

Richard Snyder, rsnyder@vims.edu



Above: The Virginia Institute of Marine Science (VIMS) led a successful eelgrass restoration effort beginning in 1997, with eelgrass beds expanding at 204 ha per year since 2012 and covering over 4,800 ha in 2025. A bay scallop restoration effort began in 2009, and exponential growth of bay scallops was recorded from 2019 to 2025

Image: Richard Snyder

Left: A bay scallop, *Argopecten irradians*, nestled in the eelgrass beds of the Virginia coastal bays

Photo: Richard Snyder

Smooth Gradients or Defined Fronts: Characterizing Within-Marsh Spatial Variability of CO₂ Fluxes

<https://doi.org/10.1007/s12237-026-01715-4>

<https://rdcu.be/feFrz>

Lena Champlin, lenakchamplin@gmail.com



Above: Low-cost instrumentation that we developed to measure CO₂ fluxes in salt marshes. The sensor packages are deployed in transparent, closed chambers on the marsh surface Photo: Lena Champlin

Right: A team at Great Bay National Estuarine Research Reserve deploying the instruments in the field, while also recording plant species. The low cost and ease of deploying these instruments allowed us to collect many locations within each salt marsh and examine spatial patterns of carbon sequestration Photo: Lena Champlin



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Changes to CERF Elections Process

After careful consideration and analysis by the Leadership and Volunteer Development Committee and the 2025–2027 Governing Board, beginning with the 2027–2029 Governing Board election, CERF will be changing to a single slate board appointment where affirmation of a slate of board members will be determined by a majority of voting members (provided quorum is reached). The President-Elect, Secretary, two Members at Large per Governing Board cycle, and a Student Member at Large are the Governing Board positions that will be included in the single slate.

The move to a single slate aligns

with association best practices.¹ Research has shown that contested elections can result in a popularity contest; that those who have lost an election are unlikely to run again, leading to a potential loss of a valuable service opportunity; and that the single slate model leads to a more balanced, diverse, and competent board.

The single slate will be developed by a Nominations Committee appointed by the Governing Board, chaired by the standing Past President, and composed of a diverse, representative set of CERF members. As we transition to this model, we welcome members to participate in the Com-

mittee to ensure broad input. If you would like to join the Nominations Committee for the 2027–2029 Governing Board, please contact Chair Linda Blum (lkb2e@virginia.edu).

Please visit the [FAQ page](#)² for more information. If you have questions or concerns, please contact Executive Director Susan Park (spark@cerf.science).

References:

1. Engle, M. and W. Brown. 2019. *Recruit the Right Board: Proven Processes for Selecting Critical Competencies*. ASAE: The Center for Association Leadership. Washington, D.C.
2. <https://www.cerf.science/cerf-elections-faqs>

Estuaries and Coasts Outstanding Reviewers



Estuaries and Coasts would not be successful without the hard work of hundreds of volunteer peer reviewers whose dedication and expertise play a crucial role in upholding the quality and integrity of the articles published in the journal. CERF recognizes the critical contributions of all our reviewers and thanks them for the generosity of their time.

The *Estuaries and Coasts* editorial board is proud to recognize the dedicated efforts of outstanding reviewers in each issue of *CERF's Up!* This recognition honors reviewers based on the quality, the number of reviews, and their promptness. From 1 January 2026 to 30 June 2026, we are happy to highlight the following Outstanding Reviewers for their significant contributions to the quality and success of *Estuaries and Coasts*.

We thank and highlight the two reviewers who each completed four reviews: Xiaojie Xu and Hallie Fischman, and the three reviewers who completed three reviews each: Anna Armitage, Marco Bartoli, and Olivia Caretti.

We are especially grateful to reviewers who complete reviews rapidly, as this allows us to offer feedback to anxious authors and publish papers quickly. We thank the 42 people who completed at least two reviews, and we recognize the 12 who completed their reviews in less than a week on average: Xiaojie Xu, Hallie Fischman, Edison Barbieri, Hanna Amaral, Richard Zimmerman, K M Aarif, Danny J. Gustafson, Jos Abril-Hernández, Yanqing Sheng, Emily Meese, Casper Avenant, and Melissa Duvall.

Thank you for your invaluable contributions to CERF and *Estuaries and Coasts*!

Propose an Estuaries and Coasts Special Collection

We're looking for guest editors to propose an *Estuaries and Coasts* Special Collection: a themed group of articles published together on a dedicated webpage, similar to a virtual special issue. You can see examples of past collections on the [Collections website](#).¹ Guest editors propose their idea to the Co-editors in Chief and, once approved, solicit articles on the topic.

Special Collections offer one key advantage over traditional Special Issues: articles are published online as soon as they're accepted, so one slow-moving paper won't hold up the rest of the collection. Guest editors can also choose between an open call, where any author may submit, or a closed call limited to invited authors. All submissions still go through *Estuaries and Coasts*' standard peer-review process, so guest editors aren't responsible for managing reviews.

We're especially interested in collections tied to sessions from CERF's biennial conference—pairing the two gives your session's ideas a wider, lasting audience. If you hosted a great session at the conference, consider turning it into a Special Collection. Full instructions and additional details are in our [Guidelines for Special Collections](#).²

1. <https://link.springer.com/journal/12237/collections>

2. <https://link.springer.com/journal/12237/updates/17216914>

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). 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 environmental managers you work with to sign up as well.

2026 CESN Issue 3

High CO₂ Can Boost Seagrass Seedling Establishment *Experimental study suggests new method for eelgrass restoration*

Source: Lowell, A.V. et al. 2026. Increasing carbon availability during seed development could facilitate eelgrass restoration by bolstering seed banks and increasing seedling production. *Estuaries and Coasts*.

<https://doi.org/10.1007/s12237-026-01670-0>

<https://rdcu.be/e9fVx>

<https://www.cerf.science/cesn-2026-issue-3#Article1>

Thick-Layer Sediment Placement: When Will Ecosystem Functions Return?

Full recovery may take a decade or more

Source: Perry, D.C. et al. 2026. Assessing recovery: Examination of greenhouse gas fluxes, soil characteristics, and vegetation in sediment enhanced marshes.

Estuaries and Coasts.

<https://doi.org/10.1007/s12237-026-01676-8>

<https://rdcu.be/e9fV1>

<https://www.cerf.science/cesn-2026-issue-3#Article2>

Utilizing Traditional Ecological Knowledge in Louisiana *Do sea-level rise predictions align with TEK?*

Source: San Antonio, K.M. et al. 2026. Assessing resilience of a coastal wetland to relative sea-level rise for a Native American tribe in Louisiana - Comparing biophysical prediction and traditional ecological knowledge. *Estuaries and Coasts*.

<https://doi.org/10.1007/s12237-026-01679-5>

<https://rdcu.be/e79pZ>

<https://www.cerf.science/cesn-2026-issue-3#Article3>

Wetlands Can Be Carbon Sources

Don't forget about carbon exchange at the air-water interface

Source: Wigand, C. et al. 2026. Carbon dioxide and methane emissions from eutrophic, vegetated coastal lagoons potentially offset carbon accumulation in eelgrass sediments. *Estuaries and Coasts*.

<https://doi.org/10.1007/s12237-026-01674-w>

<https://rdcu.be/fsYcM>

<https://www.cerf.science/cesn-2026-issue-3#Article4>

Upcoming Events

California Estuarine Research Society 2026 Meeting

21 September 2026

San Francisco, California, USA

<https://caers.wildapricot.org/event-6641373>

Restore America's Estuaries 2026 Coastal & Estuarine Summit

22–25 September 2026

San Francisco, California, USA

<https://estuaries.org/2026summit/>

ASBPA 2026 National Coastal Conference

5–8 October 2026

Atlantic City, New Jersey, USA

<https://asbpa.org/asbpa-national-coastal-conference-2026/>

GERS 2026

4–6 November 2026

Houma, Louisiana, USA

<https://gers.wildapricot.org/GERS-2026>

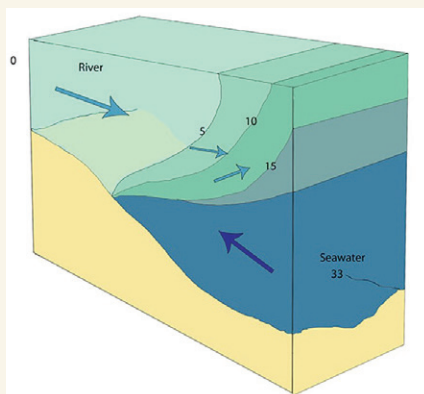
Edges

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Scott Nixon, recipient of the 2003 CERF Odum Lifetime Achievement Award, once wrote: "Earth is a place of intriguing edges." For those who study coasts and estuaries, we see that every day. We work at the boundaries between sea and land, sea and air, sea and sediments. And at countless edges within those that shape coastal ecosystems.



Salinity in salt wedge estuary

Image: geo.libretexts.org

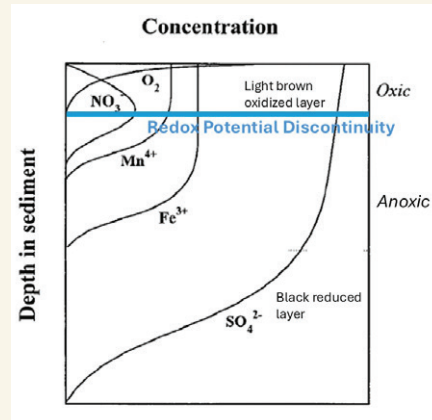
Ecologists have been intrigued by edge effects for decades. Physical edges, chemical edges, geological edges, biological edges; edges sharp, fuzzy, or on a gradient—edges are everywhere. Edges are dynamic, drive fluxes, and influence species interactions. Edge effects are a key link between landscape structure and community dynamics.

An estuary is, by definition, an edge—the boundary between ocean water and freshwater that is constantly shifting with tides, winds, storms, and river input. Edges abound in intertidal habitats—rocky shores, sandflats, mudflats, salt marshes, and mangrove forests where tides

cause rapid fluctuations of temperature, moisture, and salinity. These dynamic edges inspired Rachel Carson to write in *The Edge of the Sea*, "Underlying the beauty of the spectacle there is meaning and significance. It is the elusiveness of that meaning that haunts us, that sends us again and again into the natural world where the key to the riddle is hidden. It sends us back to the edge of the sea..."

Another remarkable edge is the sediment-water interface, with epifauna on the sediment surface and infauna below. Down in the sediments lies a second edge, the redox potential discontinuity (RPD), where oxygenated surface sediments give way to anoxic ones below. Decomposition of organic matter from the overlying water column by aerobic and anaerobic processes drives nutrient fluxes that are central to estuarine function and global biogeochemical cycles.

Ecotones, the edges between eco-



Generalized diagram of redox potential discontinuity in sediments

Image: Adapted from Kristensen 2000 in *Hydrobiologia*

systems, are defined by physical, chemical, and geological gradients, such as thermoclines, chemoclines, haloclines, and pycnoclines. Derived from the Greek *oikos* (home) and *tonos* (tension), the term reflects the dynamic interactions between adjoining environments. Edge effects can lead to high species richness, genetic and phenotypic diversity, high primary productivity, high biomass, increased populations, and unique species.

In recent years, further scrutiny of edges and ecotones by landscape ecology has led to new ecological insights. Using GIS, models, and rich datasets from aerial, satellite, and drone imagery, researchers examine the relationships between ecological processes and landscape patches, patterns, and scales. These tools have highlighted the importance of spatial heterogeneity in shaping ecological interactions, increasing resilience to disturbances, and promoting ecosystem recovery.

Seascape ecology applies similar approaches. Apart from the sea surface and, to some extent, shallow-water and intertidal habitats, seascape ecology generally has a less extensive areal dataset. For example, biological characteristics of benthic infaunal communities are mostly limited to point data from bottom grabs. Even so, seascape ecology has provided important insights into the fascinating edges of our marine world.

CERF 2025–2027 GOVERNING BOARD

President

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