

**Patton Center for Marine Science Education and Estuarine Research Center**  
**Port Aransas, Texas 78373**  
**April 22-23, 2026**

# Texas Bays & Estuaries Meeting

Patton Center for Marine Science Education

The University of Texas at Austin

Marine Science Institute

Port Aransas, Texas

April 22 & 23, 2026



**PORT ARANSAS**  
the island life



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*For more information about the TBEM sponsors, please click on the logos.*

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# Welcome!

The University of Texas Marine Science Institute is pleased to host the 16th Annual Texas Bays & Estuaries Meeting. We have an excellent program featuring talks and posters from across the state, and we're excited to see such a strong turnout. This is our second year offering concurrent sessions, and we thank you all for helping make this format such a success.

Restrooms are located just outside the auditorium in the new Patton Marine Science Education Center. Lunch will be provided on both days, and breakfast will be available each morning. Signage will be posted around campus to help guide you to meeting locations.

## Wednesday Poster Session (April 22):

The evening poster session will take place in the Lyceum from 4:00–6:00 p.m. Presenters will be available at their posters during this time. Catering will be provided, along with beer and wine during the poster and hors d'oeuvres session. You are welcome to walk around with your drinks, but please do not take them off campus.

## Thursday Poster Session (April 23):

A second poster session will be held Thursday morning in the Lyceum, with breakfast provided from 9:00–10:30 a.m.

Thank you again for participating, we hope you enjoy the meeting. We value your feedback and encourage you to scan the QR code to complete the [post-event survey](#) on Thursday after all activities have concluded.

We look forward to seeing you again next year!

## ***Texas Bays and Estuaries Meeting Committee***

Katie Swanson

Sofia Armada Tapia

Victoria Congdon

Jenny Vander Plum

Tess Kelly

Amanda Jacoby

**Follow the meeting on social media with #TBEM2026**

**Wi-Fi Name: utguest**

**No Password**

**Sign up to receive UTMSI Emergency Alerts during the meeting:**



<https://r.i-info.com/UTMSI/Temp>

# Invited Speaker

**Randy Bissell, Texas Master Naturalist™ and Adjunct Professor at Texas A&M University–Corpus Christi**



Randy Bissell is a retired professional geologist and Texas Master Naturalist™ based in Corpus Christi. With more than 40 years of experience studying sedimentary basins around the world, one area of his research focuses on how the geologic history of the Gulf of Mexico influences modern coastal landscapes. Drawing on decades of subsurface interpretation and basin analysis, Bissell examines the connections between tectonics, salt movement, sea level, sedimentation, and the organization of rivers, bays, and estuaries along the Texas coast. He is particularly interested in how buried structural “blueprints” shape the spacing and persistence of coastal systems. Randy lectures and teaches locally on geoscience-related topics, natural history, and coastal stewardship.

## **Buried Blueprints: How Gulf of Mexico Tectonics and Sedimentation Shape the Modern Texas Coast**

The modern Texas coastline is often interpreted primarily through surface processes such as waves, sediment supply, storms, and sea-level change. Yet many of the large-scale patterns observed along our coast originate in much deeper geologic structures within the Gulf of Mexico basin. This presentation explores how the tectonic and structural evolution of the Gulf—from Triassic rifting and Jurassic salt deposition to Cenozoic gravity tectonics—continues to influence coastal geomorphology and ecology. The emplacement and mobility of the Louann Salt created a ductile foundation for growth faulting, basin subsidence, and gravity-driven deformation across the continental margin. These processes generated persistent structural highs and lows that influence river pathways, define estuary locations, and help organize coastal compartments along the Texas shoreline. Observations such as the regular 20 to 30-mile spacing of many Texas rivers, deltas, and estuary bays reflect this inherited structural framework. Recognizing buried geologic “blueprints” provides important context for interpreting modern coastal landscapes and their fragile ecological systems.

# Invited Speaker

**Katherine Lieberknecht**, Associate Professor at The University of Texas at Austin



Katherine Lieberknecht is an associate professor in the Community and Regional Planning program at the School of Architecture at The University of Texas at Austin. She researches environmental planning centered around equity, with specific focus areas on climate planning, urban greening, and water planning and usually in collaboration with communities. Dr. Lieberknecht teaches courses on climate relocation and migration, urban greening, and sustainable land use planning. Prior to joining the faculty, she worked in regional land conservation.

Dr. Lieberknecht serves as co-chair of *Planet Texas 2050*, a University of Texas at Austin grand challenge research program that advances interdisciplinary research about climate change and resilience and co-designs adaptative strategies with communities. She was the faculty lead for the *Texas Metro Observatory*, a Planet Texas 2050 research project, and co-lead for the Planet Texas 2050 Flagship Project *Equitable and Regenerative Cities in a Post-Carbon Future*. She has served in leadership roles for several externally funded projects, including a National Science Foundation Smart and Connected Communities project focused on *community-led climate adaptation* in Dove Springs, Austin, Texas, and the Department of Energy-funded *Southeast Texas Urban Integrated Field Laboratory* in the Gulf Coast. Other recent projects include contributions to a community-led resilience hub study for the City of Austin, a National Oceanographic and Atmospheric Administration-funded collaboration between UT Austin and EcoRise, a *green jobs study* for the City of Austin, and the Mellon Foundation-funded *2021 CHCI Global Humanities Institute on Climate Justice and Problems of Scale*. She and her children live in Austin, which is also her childhood hometown.

## **What Can Planet Texas 2050 Do for the Coast? Community-Engaged Adaptation Research in Texas Bays and Estuaries**

In 2018, the University of Texas at Austin launched the Planet Texas 2050 (PT2050) research initiative and committed \$8-10 million for interdisciplinary, applied research focused on climate resilience, mitigation, and adaptation. PT2050's mission is to advance interdisciplinary research on resilience and to co-design adaptative strategies with stakeholders and communities in Texas. Over the past decade, over 150 UT Austin researchers, from more than 30 departments and 15 schools/colleges, have worked with students, practitioners, and community members on projects ranging from co-design of flooding, heat, and air quality strategies, to artistic collaborations, field data collection and model development, and meaning-making and storytelling about people, place, and the environment. While several projects and partnerships have focused on coastal Texas, including a collaboration in Southeast Texas and coalition-building with researchers across Gulf Coast states, as PT2050 transitions to its second decade of work and a new phase, we seek to expand and deepen partnerships with researchers, practitioners, decision makers, and residents of the Texas coastal region.

# Wednesday, April 22, 2026

- 7:30 AM **Registration**  
Patton Center for Marine Science Education, The University of Texas Marine Science Institute,  
855 East Cotter Avenue, Port Aransas, Texas
- 8:30 AM **Welcome and Opening Remarks**  
Sharon Herzka, Director, The University of Texas Marine Science Institute

## Concurrent Session: Patton Center

### FISH AND FISHERIES

- 8:45 AM **Increased Recruitment and Occupancy of Juvenile Permit in Texas Estuaries**  
Ethan Getz, Texas Parks & Wildlife Department - Coastal Fisheries
- 9:00 AM **Species-Specific Utilization Trends in a Texas Estuary: Redfish vs. Spotted Trout**  
Brynna Malley, Galveston College
- 9:15 AM **Estimating Fish Assemblages on the RGV Artificial Reef Using Adaptive Resolution Imaging Sonar**  
Kaitlyn Doyscher, University of Texas Rio Grande Valley
- 9:30 AM **Estuarine Habitat Use of Sympatric Elasmobranchs on the South Texas Coast**  
Katie Gheysen, Texas A&M University-Corpus Christi
- 9:45 AM **How Do Estuarine Fish Isotopic Niches Change in Response to Hypoxia?**  
Jacob Oster, Texas Parks and Wildlife Department - Coastal Fisheries Division
- 10:00 AM **Testing the Effectiveness of Mini Longlines in the Bay: A Pilot Study**  
Grant Maresh, Texas Parks and Wildlife Department - Coastal Fisheries
- 10:15 AM **Break**

### HABITATS AND ECOSYSTEMS SESSION I

- 10:45 AM **Habitat Projects Supporting Coastal Resource Management in Texas**  
Story Leshner Doyal, Texas Parks & Wildlife Department - Coastal Fisheries

**HABITATS AND ECOSYSTEMS**  
SESSION I

- 11:00 AM **Vertical Relief**  
Chuck Naiser, FlatsWorthy
- 11:15 AM **Mangroves Exhibit Gradual, Patchy Recovery Following a Damaging Cold Snap**  
Anna R. Armitage, Texas A&M University at Galveston
- 11:30 AM **Disturbance Regulates Mangrove Expansion and Wetland Structure Across a Texas Coastal Gradient**  
Jacob K. Doty, Texas A&M University-Corpus Christi
- 11:45 AM **Seagrass Monitoring of the Texas Coast Through Deep Learning Image Processing**  
Christian Sustayta, University of Texas Marine Science Institute
- 12:00 PM **Microplastic Distribution and Impacts to Diamondback Terrapin, Highlighting Public Education and Future Effects of Sea-Level Rise**  
Mandi Gordon, Environmental Institute of Houston, University of Houston-Clear Lake
- 12:15 PM **Lunch Served in the Patton Center**  
Participants are welcome to eat outside at tables under the Main Laboratory building, Patton Center, or Campus Commons.

**INVITED SPEAKER**

- 1:45 PM **Buried Blueprints: How Gulf of Mexico Tectonics and Sedimentation Shape the Modern Texas Coast**  
Randy Bissell, Texas Master Naturalist™ and Adjunct Professor at Texas A&M University-Corpus Christi
- 2:30 PM **Break**

## RESTORATION SESSION I

- 2:45 PM **Plastic-Free Restored Habitats: Reducing Micro- and Macro-Plastic Pollution in Community-Based Restoration of Coastal Shorelines and Oyster Reefs**  
Mckenna Reinsch, Harte Research Institute at Texas A&M University–Corpus Christi
- 3:00 PM **Early Recovery and Reinvasion Following Invasive Shrub Removal on Laguna Madre Spoil Islands**  
Marissa Spinelli, Texas A&M University-Corpus Christi, Center for Coastal Studies
- 3:15 PM **Assessing Monitoring of Living Shoreline Projects**  
Narita Ramirez, Harte Research Institute at Texas A&M University–Corpus Christi, NOAA Center for Coastal and Marine Ecosystems-II Scholar
- 3:30 PM **Shell by Shell: Community-Based Oyster Gardening for Ecosystem Recovery**  
Amy Nowlin, Texas Sea Grant | Texas A&M AgriLife Extension
- 3:45 PM **Break**
- 4:00 PM **Poster Session I / Hors d'oeuvres**  
Located in the Marine Science Institute Lyceum, between the Main Laboratory and Administrative buildings.
- 6:00 PM **Social Event**  
Located at the Sip Yard Port Aransas (123 W Cotter Ave, Port Aransas, TX 78373). The post-event meet up is not sponsored by the TBEM organizers.

# Wednesday, April 22, 2026

## Concurrent Session: ERC Seminar Room

8:30 AM **Welcome and Opening Remarks (LIVE ZOOM FROM PATTON CENTER)**  
Sharon Herzka, Director, University of Texas Marine Science Institute

8:45 AM **Break / Travel to ERC Seminar Room 2.314**

### WATER QUALITY SESSION I

9:00 AM **Clean Coast Texas**  
Madgellen Cleary, Texas Sea Grant

9:15 AM **Hog Tide: Evaluating Wild Pig Fecal Pollution in Coastal Recreational and Oyster-Harvesting Waters**  
Lydia Cates, Texas A&M University-Corpus Christi

9:30 AM **Tracking Blooms to Protect Bays: Expanding HAB Monitoring in Coastal Texas**  
Dalton Tryba, Harte Research Institute at Texas A&M University-Corpus Christi

9:45 AM **Water Quality and Phytoplankton Dynamics in the Los Olmos-Laguna Salada Tributary of Baffin Bay, TX**  
Lucero Barraza, Harte Research Institute at Texas A&M University-Corpus Christi

10:00 AM **Mapping Antimicrobial Resistance Genes Across the Baffin Bay Watershed**  
Nora Bleth, Texas A&M University-Corpus Christi

10:15 AM **Break**

### VERTEBRATE SCIENCE

10:45 AM **Nutritional Stress Leads to Developmental Dysregulation in Southern Flounder**  
Laura Sisk-Hackworth, University of Texas Marine Science Institute

VERTEBRATE SCIENCE

- 11:00 AM **Widespread Declines in Black Skimmer (*Rynchops niger*) Nesting Across the Texas Coast Revealed by Five Decades of Colonial Waterbird Surveys**  
Alexander Sharp, Coastal Bend Bays and Estuaries Program - Coastal Bird Program
- 11:15 AM **Dividing the Resource Base: Trophic Niche Partitioning of Estuarine Planktivores in the Mission–Aransas Estuary**  
Yasmina Shah Esmaili, University of Texas Marine Science Institute
- 11:30 AM **Monitoring Ground-Nesting Snowy and Wilson’s Plovers Along the Texas Coast**  
Brooke Hill, Coastal Bend Bays & Estuaries Program - Coastal Bird Program
- 11:45 AM **Talk Withdrawn**
- 12:00 PM **Characterizing the Epizoic Diatoms on Texas Kemp’s Ridley Sea Turtles: Why We Do It and What We’ve Learned So Far**  
Matt Ashworth, UTEX Culture Collection of Algae, University of Texas, Austin
- 12:15 PM **Lunch Served in the Patton Center**  
Participants are welcome to eat outside at tables under the Main Laboratory building, Patton Center, or Campus Commons.

INVITED SPEAKER - LIVE ZOOM FEED

- 1:45 PM **Buried Blueprints: How Gulf of Mexico Tectonics and Sedimentation Shape the Modern Texas Coast**  
Randy Bissell, Texas Master Naturalist™ and Adjunct Professor at Texas A&M University–Corpus Christi
- 2:30 PM **Break**

**SEDIMENT PROCESSES AND HYDRODYNAMICS**

- 2:45 PM **Think Small?: Lessons Learned and Long-Term Adaptive Management of the Cedar Bayou Regional Fish Passage Project in Aransas County, Texas**  
Aaron Horine, PE, Anchor QEA
- 3:00 PM **Context-Dependent Carbon Dynamics of Oyster Reefs**  
Kelley Savage, Harte Research Institute at Texas A&M University–Corpus Christi
- 3:15 PM **Next Generation of 3-Dimensional Ocean Modeling for Texas Bays: Development and Applications**  
Jiabi Du, Texas A&M University at Galveston
- 3:30 PM **Spatiotemporal Variability of Coastal Groundwater Discharge in Galveston Bay**  
Adelide Rianda, Texas A&M University at Galveston- Department of Marine and Coastal Environmental Science
- 3:45 PM **Break**
- 4:00 PM **Poster Session I / Hors d'oeuvres**  
Located in the Marine Science Institute Lyceum, between the Main Laboratory and Administrative buildings.
- 6:00 PM **Social Event**  
Located at the Sip Yard Port Aransas (123 W Cotter Ave, Port Aransas, TX 78373). The post-event meet up is not sponsored by the TBEM organizers.

# POSTER SESSION I PROGRAM

- 1 **Advances in Analytical Instrumentation and Applications: UTMSI Core Facilities**  
Ryan Hladyniuk, University of Texas Marine Science Institute
- 2 **Comparing the Microbial Community Structure and Fecal Indicator Bacteria Between Sewage and Septic Systems**  
Haley Stevens, University of Houston Clear Lake
- 3 **Hydrographic and Carbon Isotope Variability Across an Inshore–Offshore Gradient in the Northwestern Gulf of Mexico**  
Lauren Bomer, University of Texas Marine Science Institute
- 4 **Post-Disturbance Mangrove Recovery: Propagule Colonization, Seedling Growth, and Stand Characteristics**  
Hope Stowe, Texas A&M University-Corpus Christi
- 5 **Quantifying Hurricane Beryl Impact and Recovery of Texas Gulf Coast Dune Systems**  
Kathryn Hardy, University of Houston - Department of Earth and Atmospheric Sciences
- 6 **Reconstructing a Historical Timeline of *Sargassum* Arrival on Mustang Island**  
Nichole Dopp, University of Texas Marine Science Institute
- 7 **Assessing Effects of Wild Pig (*Sus scrofa*) Disturbance on Wetland Vegetation in South Texas**  
Brenna L. Edwards, Department of Physical and Environmental Science, Texas A&M University-Corpus Christi
- 8 **Assessing the Role of Vegetation in Recovery of Texas Coastal Dunes Following Hurricane Beryl**  
Celine Saily, University of Houston, Department of Earth and Atmospheric Sciences
- 9 **Elevated Temperature Triggers Increase in Global DNA Methylation, Cellular Apoptosis, and NO<sub>x</sub> Levels in the Gonads of Atlantic Sea Urchin**  
Md Saydur RAHMAN, School of Integrative Biological and Chemical Sciences, University of Texas Rio Grande Valley, Texas, USA

- 10 **Remote-Sensing-Based Mapping of Oyster Mariculture Suitability Along the Texas Coast**  
Isabel Johnson, University of Texas Rio Grande Valley Ocean, Coastal and Earth Sciences Program
- 11 **UAS Innovation for Environmental Monitoring and Cold-Stunned Sea Turtle Response**  
Michael Kleine, Balcones Field Services, LLC (BFS)
- 12 **Geophysical Assessment of a *Rangia cuneata* Shell Midden: Karankawa Habitation and Coast Ecology**  
Jarrett Kernen, Texas A&M University-Corpus Christi
- 13 **Investigating Fertilization Rates of Hybrid Eastern Oysters in Texas**  
Kate Gomez-Rangel, Harte Research Institute at Texas A&M University-Corpus Christi
- 14 **Benthic Invertebrate Communities in Live Versus Dead Mangrove Stands**  
Emily Letner, Texas A&M University-Corpus Christi
- 15 **Impact of *Mulinia lateralis* on Phytoplankton Biomass and Community Composition in Baffin Bay, Texas**  
Kalie Tovar, Harte Research Institute at Texas A&M University-Corpus Christi
- 16 **Tracking Coastal Water Quality Through Surfrider Citizen Science**  
Maryam Sharafeldin, Texas A&M University-Corpus Christi
- 17 **Tracing Human Impact: Linking Fecal Contamination and Antimicrobial Resistance in the Baffin Bay-Upper Laguna Madre**  
Isabella F. Cevallos, Department of Life Sciences Texas A&M University-Corpus Christi
- 18 **From Garden to Reef: Oyster Gardening for Coastal Restoration in Texas Bays**  
Olivia V. Houston, Department of Rangeland, Wildlife and Fisheries Management, Texas A&M University, College Station
- 19 **Potential Toxicity of Polystyrene Microplastic Uptake by Immune Cells**  
Krishna Veni Chikkula, Texas Southern University-Houston

- 20 **Using Long-Term Data to Assess Comprehensive Reef Health: A Case Study in Copano Bay, TX**  
Lindsey Savage, Texas Parks and Wildlife Department - Coastal Fisheries
- 21 **Modeling of Microplastic Distribution in Sediment From a Matagorda Bay Saltmarsh**  
Lydia Thurman, College of Science and Engineering and Environmental Institute of Houston, University of Houston-Clear Lake
- 22 **Developmental Effects of PFAS on Early Life Stage Southern Flounder**  
Kaci Craddock, University of Texas Marine Science Institute
- 23 **Bioaccumulation of Inorganic Pollutants of South Texas Water in Common Bottlenose Dolphins (*Tursiops truncatus*)**  
Jamie Larson, Department of Life Sciences - Texas A&M University-Corpus Christi
- 24 **Accumulation and Distribution of Microplastics Across South Texas Barrier Islands**  
Lauren Garrett- Texas A&M University-Corpus Christi
- 25 **The Use of Spectral Reflectance to Detect Stress in the Marine Algae, *Ulva lactuca***  
Fernando Lopez, The University of Texas Rio Grande Valley
- 26 **Preventing Marine Debris Through Community-Based Monofilament Recycling in Texas**  
Alexis Sabine, Texas Sea Grant

# Thursday, April 23, 2026

## POSTER SESSION II PROGRAM

- 1 **Human Impact and Habitat Type Drive Shorebird Prey Availability and Composition on the Texas Gulf Coast**  
Julia Berliner, UT Austin Dept of Integrative Biology
- 2 **Winter Carbonate Chemistry of the Western Gulf of Mexico Shelf: Observations From R/V Pelican, December 2025**  
Rosemarijn van de Lint, University of Texas Marine Science Institute
- 3 **Seasonal In Situ Photosynthetic Performance of the Seagrass *Thalassia testudinum* in South Texas**  
Hannah Januszka, University of Texas Marine Science Institute
- 4 **Language as a Tool for Conservation: Evaluating Marine Protected Area Policies Across Nations**  
Travis Moon, Texas A&M University
- 5 **A Long-Term Assessment of Seagrass Habitat and Recovery in the La Quinta Channel, Texas**  
Anastasia Canu, University of Texas Marine Science Institute & Texas A&M University-Corpus Christi
- 6 **Texas Estuarine–Coastal Exchange: A Preliminary Examination of the Juvenile Fish Communities Along an Inshore–Offshore Gradient Centered on the Aransas Pass**  
Sofia Armada Tapia, University of Texas Marine Science Institute
- 7 **Potential of Carbon Sequestration by Coastal Texas Oyster Reefs**  
Wyatt Prappas, University of Texas Rio Grande Valley
- 8 **The Investigation of Shorebird Trophic Ecology Through a Combination of DNA Barcoding and Stable Isotope Analysis of Fecal Matter**  
Mary Finch, University of Texas Marine Science Institute
- 9 **Legacy Wells and Leakage Risk in Corpus Christi Bay**  
Marques Bowden, Texas A&M University-Corpus Christi

Thursday, April 23, 2026

- 10 **Integrating Environmental Drivers of Energetic Performance Into Bull Shark Nursery Habitat Suitability**  
Cali Falkenstein, Texas A&M University-Corpus Christi
- 11 **Carbon and Sulfur Coupling on Alkalinity Dynamics in a Subtropical Estuary**  
Aneena P Raju, University of Texas Marine Science Institute
- 12 **Identifying Migration Timing and Spawning Grounds of Southern Flounder in South Texas**  
Jacob Robinson, Harte Research Institute at Texas A&M University–Corpus Christi
- 13 **Platform-Based Piston Coring Enables Insights Into the Estuarine Deep Biosphere**  
John E. Hinkle, University of Texas Marine Science Institute, University of Texas Center for Planetary Systems Habitability
- 14 **Winter Population Density of Marsh Periwinkles (*Littoraria irrorata*) in Galveston, Texas**  
Harrison Taylor, Texas A&M University at Galveston
- 15 **Assessing the Physical Toll of Fisheries Interactions on Bottlenose Dolphins (*Tursiops truncatus*) in the Texas Coastal Bend**  
Jonah Smith, Texas A&M University-Corpus Christi
- 16 **Vegetation Abundance and Ecosystem Functionality of Natural vs. Created Marsh Sites in the Nueces River Delta, Texas**  
Maggie McLaughlin, University of Texas Marine Science Institute
- 17 **Monitoring, Modeling, and More: The Coastal Science Program of TWDB**  
Alex Barth, Texas Water Development Board - Coastal Science
- 18 **Seasonal Variation in Per- and Polyfluoroalkyl Distribution in an Estuarine Ecosystem Downstream of Municipal Wastewater Outfalls**  
Caitlin Neill, University of Texas Marine Science Institute
- 19 **Integrating Traditional and Molecular Methods for Monitoring *Perkinsus marinus* (Dermo) in Galveston Bay Oysters: Preliminary Results**  
Drew Eisenbach, College of Science and Engineering and Environmental Institute of Houston, University of Houston-Clear Lake

Thursday, April 23, 2026

- 20 **Burning for Better Waters: How Can Fire Be Used to Promote Coastal Resiliency in Texas Communities?**  
Brandon Smith, Environmental Institute of Houston, University of Houston-Clear Lake
- 21 **Salinity-Driven Variation in Phenotypic Traits of *Spartina alterniflora* Along the South Texas Coast**  
Maddy Lee, Texas A&M University-Corpus Christi
- 22 **Can Shell Proteins of Eastern Oysters Serve as Indicators of Growth Conditions?**  
Jianhong Xue, University of Texas Marine Science Institute
- 23 **Improving Resilience for Oysters by Linking Brood Reefs and Sink Reefs: Preliminary Results From the TPWD/NRDA East Bay Oyster Reef Restoration Project**  
William S. Rodney, Texas Parks & Wildlife Department
- 24 **Advancing Shallow-Water Habitat Mapping: New Serpulid Reef Discoveries in the Baffin Bay Complex**  
David Norris, Jr., Texas Parks & Wildlife Department - Coastal Fisheries

# Thursday, April 23, 2026

- 8:00 AM **Registration**  
Patton Center for Marine Science Education, The University of Texas Marine Science Institute, 855 East Cotter Avenue, Port Aransas, Texas
- 9:00 AM **Poster Session II / Breakfast**  
Located in the Marine Science Institute Lyceum, between the Main Laboratory and Administrative buildings.
- 10:30 AM **Break**

## Concurrent Session: Patton Center

### HABITATS AND ECOSYSTEMS SESSION II

- 10:45 AM **PhycoRef: A Curated Reference Database for Molecular Identification of Algae and Cyanobacteria**  
Hannah S. Rempel, University of Texas Marine Science Institute
- 11:00 AM **Community Dynamics and Disturbance Responses of Cyanobacterial Mats on South Texas Wind-Tidal Flats**  
Zahra Hasan, Harte Research Institute at Texas A&M University–Corpus Christi
- 11:15 AM **Baffin Bay’s Serpulid Reefs: Past, Present, and Future**  
Terry Palmer, Harte Research Institute at Texas A&M University–Corpus Christi
- 11:30 AM **Leveraging Environmental DNA to Evaluate the Impact of Oyster Reef Health on Biodiversity**  
Marissa Kordal, University of Texas Marine Science Institute
- 11:45 AM **Effects of Oyster Reef Health on Nutrient Cycling, Consumer Communities, and Estuarine Trophic Dynamics**  
Bailey Bonham, University of Texas Marine Science Institute
- 12:00 PM **Lunch Served in the Patton Center**  
Participants are welcome to eat outside at tables under the Main Laboratory building, Patton Center, or Campus Commons.

INVITED SPEAKER

- 1:30 PM **What Can Planet Texas 2050 Do for the Coast? Community-Engaged Adaptation Research in Texas Bays and Estuaries**  
Katherine Lieberknecht, Associate Professor at The University of Texas at Austin

EDUCATION, CITIZEN SCIENCE, AND COMMUNICATIONS

- 2:15 PM **Hooked on Conservation: Angler Perspectives and the Power of Citizen Science in the Texas Shore-Based Shark Fishery**  
Jensen Smith, Texas A&M University-Corpus Christi
- 2:30 PM **TMMSN Stranding Response: A Student Perspective**  
Brynna Malley, TMMSN
- 2:45 PM **Break**

RESTORATION  
SESSION II

- 3:00 PM **Nueces Delta Shoreline Protection and Restoration**  
Aaron Baxter, Coastal Bend Bays & Estuaries Program
- 3:15 PM **Adaptively Managing an Oyster Reef Impacted by Dredged Material in Galveston Bay**  
Kathy Sweezey, The Nature Conservancy
- 3:30 PM **Texas Coast Rookery Island Expansion and Protection—Benny’s Shack and Tern Island**  
Eli Whitworth, HDR Engineering
- 3:45 PM **The Texas Wetland Action Mapping (Texas WAM) Plan and Tool: A Collaborative, Statewide Initiative to Protect and Restore Tidal Wetlands and Their Migration**  
Charlotte Nash, The Nature Conservancy - Texas Chapter
- 4:00 PM **Student Awards & Closing Remarks**

Thursday, April 23, 2026

9:00 AM **Poster Session II / Breakfast**  
Located in the Marine Science Institute Lyceum, between the Main Laboratory and Administrative buildings.

10:30 AM **Break / Travel to ERC Seminar Room 2.314**

## Concurrent Session II: ERC Seminar Room

### WATER QUALITY SESSION II

- 10:45 AM **Managing for Freshwater Inflows in the Coastal Bend**  
Kristina Alexander, Endowed Chair for Marine Policy & Law, Harte Research Institute at Texas A&M University–Corpus Christi
- 11:00 AM **Enhanced CO<sub>2</sub> Uptake and Primary Production After Cold Front Passage in Subtropical Texas Coastal Water**  
Xinping Hu, University of Texas Marine Science Institute
- 11:15 AM **The Effect of Freshwater Inflow on Zooplankton Community Ecology in the Corpus Christi Bay and Aransas Bay Systems, Texas, USA**  
Miles Jordan, Texas A&M University-Corpus Christi
- 11:30 AM **Effects of Filtration Volume and Preservation Method on eDNA Recovery for Freshwater Mussel Monitoring in Texas Rivers**  
Mizanur Rahman, School of Earth, Environmental, and Marine Sciences, University of Texas Rio Grande Valley, Brownsville, Texas, USA
- 11:45 AM **Particulate Black Carbon as a Tracer for Estuarine–Coastal Exchange Processes**  
Siddhartha Sarkar, University of Texas Marine Science Institute
- 12:00 PM **Tracking the Water “Releases”: How Freshwater Inflows to Nueces Bay Are Managed**  
Adrien Hilmy, Coastal Bend Bays & Estuaries Program
- 12:15 PM **Lunch Served in the Patton Center**  
Participants are welcome to eat outside at tables under the Main Laboratory building, Patton Center, or Campus Commons.

**INVITED SPEAKER LIVE ZOOM FEED**

- 1:30 PM **What Can Planet Texas 2050 Do for the Coast? Community-Engaged Adaptation Research in Texas Bays and Estuaries**  
Katherine Lieberknecht, Associate Professor at The University of Texas at Austin

**EDUCATION, CITIZEN SCIENCE, AND COMMUNICATIONS - LIVE ZOOM FEED**

- 2:15 PM **Hooked on Conservation: Angler Perspectives and the Power of Citizen Science in the Texas Shore-Based Shark Fishery**  
Jensen Smith, Texas A&M University-Corpus Christi
- 2:30 PM **TMMSN Stranding Response: A Student Perspective**  
Brynna Malley, TMMSN
- 2:45 PM **Break**

**RESTORATION - LIVE ZOOM FEED**  
SESSION II

- 3:00 PM **Nueces Delta Shoreline Protection and Restoration**  
Aaron Baxter, Coastal Bend Bays & Estuaries Program
- 3:15 PM **Adaptively Managing an Oyster Reef Impacted by Dredged Material in Galveston Bay**  
Kathy Sweezey, The Nature Conservancy
- 3:30 PM **Texas Coast Rookery Island Expansion and Protection—Benny’s Shack and Tern Island**  
Eli Whitworth, HDR Engineering
- 3:45 PM **The Texas Wetland Action Mapping (Texas WAM) Plan and Tool: A Collaborative, Statewide Initiative to Protect and Restore Tidal Wetlands and Their Migration**  
Charlotte Nash, The Nature Conservancy - Texas Chapter
- 4:00 PM **Student Awards & Closing Remarks**

# Student Awards

Student presentations and posters are an important aspect of this meeting. Student awards for presentations and posters are just some ways to acknowledge excellence in research. The Coastal Bend Bays & Estuaries Program generously sponsors the best student presentation awards. Student oral presentations will be awarded with 1st (\$200), 2nd (\$150), and 3rd (\$100) place prizes. Student posters will be awarded with 1st (\$150), 2nd (\$100), and 3rd (\$50) place prizes.

## Previous Oral Presentation Winners:

- 2014:** Philip Jose, Texas A&M University-Corpus Christi, 1st Place  
Rachel Arney, The University of Texas- Brownsville, 2nd Place  
Quentin Hall, Texas A&M University-Corpus Christi, 3rd Place
- 2015:** Meredith Evans, The University of Texas Marine Science Institute, 1st Place  
Kathryn Mendenhall, Texas A&M University-Corpus Christi, 2nd Place  
Juliet Lamb, Clemson University and Department of Forestry and Environmental Conservation, 3rd Place
- 2016:** Meredith Evans, The University of Texas Marine Science Institute, 1st Place  
Nick Reyna, The University of Texas Marine Science Institute, 2nd Place  
Victoria Congdon, The University of Texas Marine Science Institute, 3rd Place
- 2017:** Austin Green, The University of Texas Rio Grande Valley, 1st Place  
Alex Tompkins, Texas A&M University-Corpus Christi, Harte Research Institute, 2nd Place  
Erin Reed, The University of Texas Marine Science Institute, 3rd Place (tie)  
Victoria Congdon, The University of Texas Marine Science Institute, 3rd Place (tie)
- 2022:** Jennifer Gilmore, Harte Research Institute, Texas A&M University-Corpus Christi, 1st Place  
Jacob Doty, Texas A&M University-Corpus Christi, 2nd Place  
Kaiya Shealy, Texas A&M University-Corpus Christi, 3rd Place
- 2024:** Jacob Doty, Texas A&M University-Corpus Christi, 1st Place  
Philip Souza, Jr., The University of Texas Marine Science Institute, 2nd Place  
C. Melman Neill, The University of Texas Marine Science Institute, 3rd Place
- 2025:** Annie Zeiler, The University of Texas Rio Grande Valley, 1st Place  
Alexandra M. Good, Harte Research Institute, Texas A&M University-Corpus Christi, 2nd Place  
Kelley Savage, Harte Research Institute, Texas A&M University-Corpus Christi, 3rd Place

**Awards sponsored by Coastal Bend Bays & Estuaries Program**

# Student Awards

## Previous Poster Presentation Winners:

- 2014:** **Melissa McCutcheon**, Texas A&M University-Corpus Christi, 1st Place  
**Kevin DeSantiago**, Texas A&M University-Corpus Christi, 2nd Place  
**John Mohan**, The University of Texas Marine Science Institute, 3rd Place
- 2015:** **Ashley Whitt**, Texas A&M University-Galveston, 1st Place  
**Jason Jenkins**, The University of Texas Marine Science Institute, 2nd Place  
**Eric White**, Texas A&M University-Corpus Christi, 3rd Place
- 2016:** **Natasha Breaux**, Texas A&M University-Corpus Christi, Harte Research Institute, 1st Place  
**Rachel Edwards**, Texas A&M University-Corpus Christi, Harte Research Institute, 2nd Place  
**Jake Loveless**, Texas A&M University-Corpus Christi, 3rd Place
- 2017:** **Hailey Boeck**, Texas A&M University-Corpus Christi, 1st Place  
**Tyler Schact**, Texas A&M University-Corpus Christi, 2nd Place  
**Kesley Gibson**, Texas A&M University-Corpus Christi, Harte Research Institute, 3rd Place
- 2022:** **Alyssa Outhwaite**, Harte Research Institute, Texas A&M University-Corpus Christi, 1st Place  
**Felipe Urrutia**, Harte Research Institute, Texas A&M University-Corpus Christi, 2nd Place  
**Kathleen Roark**, The University of Texas Marine Science Institute, 3rd Place
- 2024:** **Annie Zeiler**, The University of Texas Rio Grande Valley, 1st Place  
**Isabel Nykamp**, Harte Research Institute, Texas A&M University-Corpus Christi, 2nd Place  
**Lu Lin**, The University of Texas Marine Science Institute, 3rd Place
- 2025:** **Lily Tubbs**, Harte Research Institute, Texas A&M University-Corpus Christi, 1st Place  
**Julia Berliner**, UT Austin Department of Integrative Biology, 2nd Place  
**Samantha Maupin**, Dept. of Life Sciences, Texas A&M University - Corpus Christi , 3rd Place

**Awards sponsored by Coastal Bend Bays & Estuaries Program**

# Abstracts for Oral Presentations

## FISH AND FISHERIES

### **Increased Recruitment and Occupancy of Juvenile Permit in Texas Estuaries**

Ethan Getz, Texas Parks & Wildlife Department- Coastal Fisheries

Permit are a prized sportfish throughout much of their range. However, little is known about the species in the northwestern Gulf and population trends have not been determined. Here, over 40 years of bag seine and gill net data (1983-2024) collected by the Texas Parks and Wildlife Department were used to describe Permit occupancy in estuaries along the Texas coast. Permit were sampled during each year of the study and were found in every major estuarine system. While seines and gill nets were used to sample multiple life stages, most Permit were <250 mm TL and very few, if any, were likely mature adults based on their size. Permit were present from April to December and abundance peaked in September. Boosted Regression Tree analysis was used to describe environmental conditions associated with Permit presence and suggested that high temperatures and moderate salinities were connected to increased presence. Over the time series, a positive trend in abundance was described in bag seine samples, but gill net samples did not yield the same trend. These results indicate that Texas estuaries may serve as suitable and increasingly important nurseries for juvenile Permit. However, the absence of adult Permit suggests that juvenile/subadult survival may be low or that adults prefer offshore habitats. This study represents an important first step in Permit research in the northwestern Gulf and may inform management strategies if a Texas fishery develops in the future.

### **Species-Specific Utilization Trends in a Texas Estuary: Redfish vs. Spotted Trout**

Brynna Malley, Galveston College

Red drum (*Sciaenops ocellatus*) and spotted seatrout (*Cynoscion nebulosus*) are two of the most ecologically and economically important sportfish in Galveston Bay. Although these species coexist within the same estuarine system, research indicates they utilize habitats differently in response to salinity gradients, vegetation structure, prey availability, and other factors. This presentation highlights current scientific findings on habitat selection, spatial distribution, and life-history strategies of red drum and spotted seatrout, with particular emphasis on marsh edges, seagrass meadows, oyster reefs, and open bay systems.

## Estimating Fish Assemblages on the RGV Artificial Reef Using Adaptive Resolution Imaging Sonar

Kaitlyn Doyscher, University of Texas Rio Grande Valley

Artificial reefs are implemented globally to enhance fish recruitment and provide marine habitat. However, the integration of low-profile nursery habitats in reef design has been understudied due to the difficulties observing this habitat with visual or acoustic methods. The objectives of our study are to determine the abundance and size of fish associated with replicated artificial nursery habitats using adaptive resolution imaging sonar (ARIS). Nine habitat configurations were sampled within the Rio Grande Valley (RGV) Artificial Reef, the largest artificial reef in Texas. A specialized, custom-made tow body was created to house the ARIS below our research vessel as we completed mobile surveys of each site. Frames were captured using 1.8 MHz, the identification frequency. Images were processed using ARISFish and Echoview to detect, quantify, and measure fish residing near or on nursery habitats. Fish abundance and length will be compared among the nine artificial reef configurations to assess the effects of vertical relief and site area. These findings will fill knowledge gaps regarding the key factors of artificial reef design that influence fish recruitment and distribution on reef habitat.

## Estuarine Habitat Use of Sympatric Elasmobranchs on the South Texas Coast

Katie Gheysen, Texas A&M University-Corpus Christi

South Texas estuaries provide essential habitats and putative nurseries for bonnetheads (*Sphyrna tiburo*), spinner sharks (*Carcharhinus brevipinna*), and cownose rays (*Rhinoptera bonasus*). These systems support multiple life stages, yet the degree to which these species partition habitat in space and time remains unclear. We analyzed acoustic telemetry data from 14 bonnetheads, 8 spinner sharks, and 15 cownose rays between 2024 and 2026 to quantify spatial, temporal, and social segregation. Comparisons of habitat utilization distributions (UDs) revealed species-specific core use areas (50% UD). Bonnetheads occupied the largest proportion of unique core habitat (21%), compared to cownose rays (11%) and spinner sharks (4%). Core-area overlap occurred primarily between bonnetheads and cownose rays (46%), with only 5% shared by all three species. Broader home ranges (95% UD) showed greater spatial overlap, with 36% shared among species. To examine co-occurrence patterns, weighted social networks were constructed to assess community structure (modularity, measuring how individuals form groups), identify individuals connecting groups (betweenness centrality), and evaluate whether species preferentially associate with conspecifics (species assortativity). Modularity revealed a non-random community structure with both species-specific and mixed-species groups, while betweenness centrality highlighted individuals acting as connectors across groups, suggesting shared movement pathways or temporal overlap in space use. Species assortativity showed a tendency toward conspecific associations, with comparisons of within- and between-species edge strengths (reflecting the intensity of shared space use) indicating stronger within-species connections. Together, these analyses demonstrate that elasmobranchs partition habitat and time while maintaining overlap, with implications for essential fish habitat designations and coexistence.

## FISH AND FISHERIES

### How Do Estuarine Fish Isotopic Niches Change in Response to Hypoxia?

Jacob Oster, Texas Parks and Wildlife Department - Coastal Fisheries Division

Fish may be displaced by environmental stressors, resulting in shifts in diet or habitat use. However, observing shifts in fish behavior due to sublethal stress is challenging. Stable isotope ratios can be used to estimate isotopic niches for individual fish, subpopulations, or a species, and infer changes in diet or habitat use. To assess how fish isotopic niches change in response to hypoxia exposure, Atlantic Croaker, a demersal forage fish; Southern Flounder, a demersal piscivore; and Red Drum, a generalist fish, were collected from Matagorda Bay, a bay system with historic episodic hypoxia, and stable isotope ratios in muscle tissue of all fish were analyzed. Stable isotope ratios were compared with edge compositions of trace elements in the fish otoliths to assess whether recent exposure to hypoxia resulted in shifts in isotopic niche volumes. The isotopic niches of the generalist Red Drum were reduced for fish exposed to hypoxic conditions when compared to individuals in the same species with less exposure to hypoxia, while the demersal forage fish Atlantic Croaker had expanded or shifted isotopic niches between exposure types. The isotopic niches of Southern Flounder did not change in response to hypoxia exposure. Collectively, these results illustrate the range of variable responses of estuarine fishes at the species and population level to hypoxia.

### Testing the Effectiveness of Mini Longlines in the Bay: A Pilot Study

Grant Maresh, Texas Parks and Wildlife Department - Coastal Fisheries

“Mini longlines” were tested to explore an additional gear type to compliment gill nets that can monitor adult finfish and elasmobranchs utilizing habitat away from the shoreline (e.g., abandoned oil rigs, oyster reefs) throughout the Galveston Bay system.[MF1.1] Monitoring adult finfish is a fundamental part of fisheries management, allowing for the establishment of baseline trends in fish communities over time. The Texas Parks and Wildlife Department (TPWD) marine resource monitoring program has historically utilized seasonal gill nets for monitoring adult finfish along the Texas Coast. However, gill nets have some limitations, mainly shoreline dependency. Long lines were set monthly from May 2025 – present and consisted of a 150-meter main line with 25 hooks fished for one hour. To compare the catch rate of different hook sizes, bait, and dispositions we deployed three hook sizes (8/0, 12/0, and 16/0), three bait types (Mullet, Atlantic mackerel, and shrimp), and two dispositions (floating and sinking) respectively. Hardhead Catfish[MF2.1] (*Ariopsis felis*) and Gafftopsail catfish [MF3.1](*Bagre marinus*) dominated the study period, representing 86% of the total catch. Elasmobranchs made up 7% of the total catch, but most elasmobranch encounters occurred during the summer months (June-August) where they accounted for 14% of the catch. Only three gamefish were encountered during sampling (two Red Drum [MF4.1]and one Spotted Seatrout[MF5.1]). Overall, this gear type may be an effective tool at monitoring catfish species year-round and juvenile elasmobranchs during the summer, but low encounters with other finfish species suggest an ineffectiveness to assess other populations.

# HABITATS AND ECOSYSTEMS

## SESSION I

### **Habitat Projects Supporting Coastal Resource Management in Texas**

Story Leshar Doyal, Texas Parks & Wildlife Department - Coastal Fisheries

Ecosystem based management is an integrated approach to adaptive environmental management. This method incorporates several interconnected facets of the ecosystem (e.g. biological, physical, economic, cultural) across multiple scales into the decision-making process. It has widely become the most promising model for balancing sustainable development with biodiversity protection. Texas Parks and Wildlife Department (TPWD) Coastal Fisheries has been collecting fisheries data since the 1970s. While data from these long-standing fishery independent and dependent monitoring programs are critical, pairing it with other types of data can offer a more holistic approach to resource management.

The TPWD Habitat Assessment Team (HAT) was created in 2016 and is responsible for mapping Texas's coastal habitats using a combination of remote sensing and in situ approaches. The spatial data that HAT collects and compiles is currently being utilized by the Department as standalone data, as well as paired with other datasets (such as fishery management data), to inform various research initiatives, coastal project reviews, and management decisions. It is known that estuarine habitat influences marine fish and invertebrate growth, recruitment, and survival. Here, we present a summary of the habitat datasets that HAT maintains and an overview of the current and future applications of that data in support of improved ecosystem-based management.

### **Vertical Relief**

Chuck Naiser, FlatsWorthy

Examination of the critical influence of reef height to the survival of the coastal ecosystem. The importance of this feature to the survival of the whole and the functionality of our historic reef system. The threats to their destruction and the resulting implications.

# HABITATS AND ECOSYSTEMS

## SESSION I

### **Mangroves Exhibit Gradual, Patchy Recovery Following a Damaging Cold Snap**

Anna R. Armitage, Texas A&M University at Galveston

Biodiversity-ecosystem function theory suggests that speciose systems may be more resilient to disturbance impacts, exhibiting faster recovery than low diversity communities. We leveraged a unique opportunity to test this theory by assessing the role of species diversity on coastal wetland recovery following a damaging freeze event on the Texas Gulf Coast. The study system was a long-term experiment in the marsh-mangrove ecotone where we had maintained varying levels of plant diversity in ten large (24 m x 42 m) study plots since 2012, ranging from *Avicennia germinans* (black mangrove) monocultures to relatively speciose marsh-mangrove mixtures. Prior to the disturbance event, plots with more than 35% mangrove cover had relatively low Simpson's diversity index scores. In contrast, plots with fewer mangroves had a more speciose marsh community. A severe cold snap in 2021 (minimum temperature -9°C), caused extensive (>90%) mangrove mortality across the Texas coast, including the Coastal Bend region. In areas that had been dominated by mangroves, this resulted in near-total loss of vegetation in the wetland. Five growing seasons after the storm, living plant cover in much of the area remains 50% lower than pre-cold snap levels. However, recovery occurred more rapidly in high diversity plots, with total living plant cover (mangrove + marsh) exceeding pre-disturbance levels within just three growing seasons. The best performing plant mixtures had at least some mangroves interspersed among marsh plants. Areas with persistently low plant cover may benefit from restoration action to mitigate the risk of long-term habitat loss.

# HABITATS AND ECOSYSTEMS

## SESSION I

### **Disturbance Regulates Mangrove Expansion and Wetland Structure Across a Texas Coastal Gradient**

Jacob K. Doty, Texas A&M University- Corpus Christi

Climate warming has led to increased population sizes and dominance by the black mangrove (*Avicennia germinans*) in salt marshes. Projections from NOAA suggest that a 1–2°C increase will further favor mangrove dominance in the Gulf. This shift alters habitat structure and community assembly, indicating an ongoing regime shift. However, disturbance events such as extreme winter freezes (large spatial disturbance effects) and tropical storms/hurricanes (local disturbance effects) can cause widespread mangrove mortality, pushing systems back toward marsh dominance. Evidence shows that mangrove expansion fluctuates with winter severity and disturbance frequency. This study examines how environmental gradients and disturbance shape marsh/mangrove dynamics across three Texas coastal sites. Each site experienced different disturbance frequencies since February 2021 when winter storm Uri caused mass aboveground *Avicennia* mortality as far south as Corpus Christi, TX (27.8°N). Site disturbance levels are ranked as follows: Boca Chica (26°N) Low, Cohn (27.8°N) Intermediate, and Port OConnor (28.4°N) High.

Results show significant differences in water depth ( $F_{2,132} = 16.39, p < 0.001$ ), salinity ( $F_{2,132} = 16.39, p < 0.001$ ), and community composition (PERMANOVA,  $p = 0.001$ ), but not mangrove size ( $p = 0.32$ ) by site. Piecewise SEM indicates mangrove size is driven by water depth ( $\beta = 1.00$ ), distance from water ( $\beta = 0.37$ ), community composition ( $\beta = 0.51$ ), and substrate moisture ( $\beta = 0.32$ ), with no salinity effect. These findings show that disturbance frequency shapes environmental gradients and community structure, ultimately controlling mangrove size and dominance in coastal wetlands.

# HABITATS AND ECOSYSTEMS

## SESSION I

### **Seagrass Monitoring of the Texas Coast Through Deep Learning Image Processing**

Christian Sustayta, University of Texas Marine Science Institute

Seagrass meadows are among the most ecologically and economically valuable coastal habitats in Texas. Yet large-scale, high-resolution mapping remains a persistent challenge along the extensive and spatially complex Texas coastline. This study presents an automated seagrass classification pipeline for the application of a deep convolutional neural network (DCNN) approach that can be applied to multispectral PlanetScope 8-band satellite imagery. The DCNN was utilized through the Texas Advanced Computing Center (TACC) Lonestar6 high-performance computing environment across scenes spanning the entire Texas Coast.

A primary preprocessing challenge is the spectral dissemination between different types of coastal land cover types including submerged and emergent vegetation, substrate types (rocks, mud, sand), and atmospheric effects such as cloud shadows. These different layers present their own unique classification challenges given the diverse habitats of the Texas coast. Following the preprocessing, the DCNN classifier CASSeaNet was applied to delineate seagrass presence and absences, with accuracy assessment currently ongoing using NOAA 2012 benthic habitat data and field-collected ground truth points (from the Texas Seagrass Monitoring Program) as independent validation sources.

This study represents a scalable, high-resolution approach to seagrass bed mapping that can be updated as new PlanetScope or other satellite imagery becomes available, enabling improved temporal monitoring of these coastal habitats. Preliminary classification outputs demonstrate CASSeaNet's ability to capture the spatial distribution of seagrass beds along the coast, with full quantitative accuracy assessment in progress. Results will support coastal monitoring and restoration efforts in the Gulf of Mexico region.

# HABITATS AND ECOSYSTEMS

## SESSION I

### **Microplastic Distribution and Impacts to Diamondback Terrapin, Highlighting Public Education and Future Effects of Sea-Level Rise**

Mandi Gordon, Environmental Institute of Houston, University of Houston-Clear Lake

Accumulation of anthropogenic debris within inshore and near-shore coastal habitats not only affects wildlife, but the people who work, live, and recreate in these areas. As plastic debris persists within the environment, it is worn into incrementally smaller pieces, eventually becoming microplastics (e.g., particles < 5-mm in diameter). While the accumulation of microplastics within the marine and estuarine environment is an emerging topic of concern, little is known about the dispersal or distribution of these particles, especially in relation to sea level rise, or about the potential impact of these particles to wetland-specialist wildlife, such as the Diamondback Terrapin (*Malaclemys terrapin*). Here, we use a transdisciplinary approach to evaluate the distribution and impacts of microplastics within habitats where terrapin are likely to occur. We include small- and landscape-scale geospatial sea-level rise projection models of microplastic distributions in the Matagorda and San Antonio Bay complex. This is overlaid with species distribution models for likelihood of occurrence of terrapin in concurrent areas. We also describe how our research-driven results are incorporated into local education and outreach programs through a series of “virtual field trips”. Finally, through field efforts, we have expanded Nurdle Patrol efforts to areas within the Matagorda Bay system which are less likely to be routinely visited by citizen scientists. Through this work, we aim to fill knowledge gaps in the understanding of how these particles are distributed throughout the estuarine environment and hope to empower local communities to act as stewards for their adjacent habitats and recreational areas.

# HABITATS AND ECOSYSTEMS

## SESSION II

### **PhycoRef: A Curated Reference Database for Molecular Identification of Algae and Cyanobacteria**

Hannah S. Rempel, University of Texas Marine Science Institute

DNA metabarcoding – the bulk amplification and sequencing of environmental DNA to characterize a diverse array of taxa simultaneously from a single sample – is revolutionizing our understanding of biodiversity. However, its utility and accuracy are predicated on the availability of robust reference databases containing known sequences for a target gene region across a broad taxonomic range. While curated databases exist for animals, fungi, terrestrial plants, bacteria, and archaea, we lack a similarly extensive resource for algae and photosynthetic cyanobacteria. The 23S rRNA plastid gene contains a hypervariable region conserved across major eukaryotic algal and cyanobacterial lineages, as well as related photosynthetic taxa, providing a high-resolution marker for their identification. We developed PhycoRef, a 23S rRNA reference database curated from NCBI GenBank and SILVA records and formatted for widely used bioinformatics platforms. We provide taxonomy using nomenclature from NCBI and the World Register of Marine Species (WoRMS), alongside alternate versions of the database compatible with several common 23S primers. PhycoRef contains over 25,000 sequences spanning over 6,000 distinct genera and 133 phyla. We include open-access code and tutorials for applying PhycoRef across diverse samples, including epilithic algae matrices and herbivorous fish gut contents, as well as vignettes for seamless database updates over time. By providing a curated and comprehensive 23S reference database, as well as annotated code for taxonomic assignments and database updates, this resource supports global research on primary producer communities and aquatic food webs.

# HABITATS AND ECOSYSTEMS

## SESSION II

### **Community Dynamics and Disturbance Responses of Cyanobacterial Mats on South Texas Wind-Tidal Flats**

Zahra Hasan, Harte Research Institute at Texas A&M University–Corpus Christi

Wind-tidal flats are unique coastal habitats often associated with laminated cyanobacterial mats that perform key ecological functions, such as sediment stabilization and provision of highly productive foraging grounds for shorebirds. However, wind-tidal flats at Boca Chica, Texas have experienced extensive disturbance, including ongoing impacts from off-road vehicles and rocket launch activities since 2014. These pressures highlight the need for comprehensive assessments to understand the ecological condition of cyanobacterial mats across this intermittently damaged landscape.

To address this need, cyanobacterial mats in Boca Chica were extensively sampled across 24 hectares of damaged and undamaged wind- tidal flats in January and August 2024. Mat samples were evaluated using High-Performance Liquid Chromatography (HPLC) photopigment analysis and microscopy to investigate spatiotemporal differences in phototroph community composition, and to compare damaged and undamaged conditions. HPLC data were analyzed using ChemTax (v. 1.95) to estimate the contribution of major algal groups (cyanobacteria, diatoms, green algae) to the total phototroph biomass (chl a).

PERMANOVA results indicate spatiotemporal variability in mat community composition, but not large differences between damaged and undamaged conditions. Differences in community composition were especially pronounced at lower elevations with proximity to Boca Chica Bay, reflecting gradients in hydrology and sediment composition. This study demonstrates the utility of the HPLC method as a rapid, quantifiable tool for monitoring cyanobacterial mat communities at multi-hectare scales. As wind-tidal flats face growing pressures from development and sea level rise, scalable tools like HPLC pigment analysis will be important for tracking habitat condition and informing adaptive management strategies.

# HABITATS AND ECOSYSTEMS

## SESSION II

### **Baffin Bay's Serpulid Reefs: Past, Present, and Future**

Terry Palmer, Harte Research Institute at Texas A&M University–Corpus Christi

Baffin Bay, Texas, USA, is a predominantly hypersaline estuary characterized by evaporation rates that exceed freshwater delivery, long hydrologic residence times, and the occurrence of unique reefs created by serpulid worms. Baffin Bay's serpulid reefs support a unique benthic macrofaunal community with 191 times greater abundance, 97 times greater biomass, and twice the number of species than in the surrounding soft sediments. The macrofauna inhabiting these structures likely serve as an important food source for sport fish and other higher trophic-level fauna, particularly in hypersaline periods when soft-sediment macrobenthic food resources are scarce. Many anecdotal accounts state that Baffin Bay's Serpulid reefs are decreasing in size, although accurate mapping has not occurred to quantify any changes. We have recently been collaborating with TPWD and others to determine the current extent of serpulid reefs in Baffin Bay as a benchmark to determine future changes. We have also been investigating the functioning of these reefs by conducting ongoing monitoring of the reef and soft sediment communities since 2018, examining timing and location of serpulid settlement via recruitment tiles, and comparing settlement on different substrate types. The success of serpulid worms in our studies has encouraged us to plan for what is likely to be the world's first serpulid reef restoration effort.

### **Leveraging Environmental DNA to Evaluate the Impact of Oyster Reef Health on Biodiversity**

Marissa Kordal, University of Texas Marine Science Institute

The eastern oyster (*Crassostrea virginica*) is an ecosystem engineer in estuaries across the eastern United States and Gulf of Mexico. Oyster reefs provide critical habitat and refuge for many estuarine species and remove excess nitrogen from the water column. Oysters also comprise a large fishery and provide income for coastal communities in Texas, despite significant, ongoing losses in oyster biomass worldwide. Here, we assess oyster reef biodiversity along the Texas Coastal Bend using environmental DNA and metabarcoding across a gradient of oyster density and environmental factors such as temperature and salinity. We target the cytochrome c oxidase subunit I (COI) gene region, a universal marker that performs well across eukaryotic taxa, and the 12S rRNA gene region, which amplifies a broad range of fishes. We find that as oyster density on reefs decreases, species richness declines and community composition shifts. Our results highlight how dredging, harvest pressure, and environmental factors can alter the ecological communities associated with oyster reefs. The biodiversity and ecosystem services that these reefs provide are vital to the health of our estuaries and will be lost without conservation.

# HABITATS AND ECOSYSTEMS

## SESSION II

### **Effects of Oyster Reef Health on Nutrient Cycling, Consumer Communities, and Estuarine Trophic Dynamics**

Bailey Bonham, University of Texas Marine Science Institute

Oyster reefs are foundational coastal habitats that enhance biodiversity, improve water quality, and support productive fisheries, yet more than 85% have been lost globally due to overharvesting, habitat degradation, and pollution. Along the Texas coast, where oyster landings generate approximately \$91 million annually, continued reef decline threatens both ecosystem function and long-term fishery sustainability. Understanding how reef condition influences ecosystem processes, particularly nutrient cycling, is therefore critical for effective management and restoration. We examined how oyster reef structure and management status shape benthic nutrient pathways across Texas estuaries. Using 42 reefs across six bay systems, we integrated dredge and quadrat surveys, hydrological monitoring, benthic community sampling, and bulk stable isotope analyses to assess how oyster density and environmental gradients influence trophic pathways. Benthic epifauna were quantified using oyster sampling units to evaluate how reef degradation alters community structure. Bulk stable isotope analyses ( $\delta^{13}\text{C}$  and  $\delta^{15}\text{N}$ ) of oysters, particulate organic matter, and associated consumers were used to trace shifts in resource assimilation and nutrient flow. We hypothesized that reduced oyster density would alter basal resource signatures and compress trophic structure due to diminished filtration capacity. Our results indicate that environmental conditions, particularly salinity and oyster density, influence nutrient pathways. High-density, high-salinity reefs exhibited distinct isotopic signatures that propagated to cryptic reef consumers, suggesting that reef condition regulates energy flow and trophic structure. These findings highlight the importance of incorporating ecosystem function into oyster reef management to sustain both ecological integrity and fisheries productivity.

# RESTORATION

## SESSION I

### **Plastic-Free Restored Habitats: Reducing Micro- and Macro-Plastic Pollution in Community-Based Restoration of Coastal Shorelines and Oyster Reefs**

Mckenna Reinsch, Harte Research Institute at Texas A&M University–Corpus Christi

Oyster reef restoration is used to counteract reef loss caused by unsustainable harvest practices and environmental change and commonly relies on polyethylene plastic mesh bags filled with sun-cured shells to promote oyster recruitment and structural stability. However, the widespread use of plastic mesh introduces persistent debris and microplastics into estuarine ecosystems, where they accumulate in sediments and organisms, including oysters, creating a conflict between habitat restoration and marine debris reduction goals. Therefore, this project assesses the performance, longevity, usability, and cost-effectiveness of newly developed plastic-free restoration materials, including cement-infused jute rings, basalt mesh, and biopolymer mesh, through two years of field and laboratory experiments. Materials were evaluated for oyster recruitment, fauna biodiversity, material longevity, resilience, volunteer compatibility, and unintended consequences. Preliminary projects show increasing recruitment and shell heights across all treatments, although cement-infused jute rings supported lower recruitment than alternative materials. Biopolymer and basalt mesh degraded rapidly, whereas cement-infused jute rings and plastic mesh maintained structural integrity. Mobile fauna communities were similar among mesh treatments but were smaller and less diverse on jute rings. Project findings provide important data to guide restoration material selection, support stakeholder decision making, and accelerate the adoption of sustainable, plastic-free methods in coastal restoration.

# RESTORATION

## SESSION I

### **Early Recovery and Reinvasion Following Invasive Shrub Removal on Laguna Madre Spoil Islands**

Marissa Spinelli, Texas A&M University-Corpus Christi, Center for Coastal Studies

Spoil islands provide valuable habitat that supports coastal biodiversity and enhances estuarine resilience. Vegetation composition varies due to differences in island size, topography, soil characteristics, hydrology, and disturbance history. Brazilian peppertree (*Schinus terebinthifolia*), hereafter *Schinus*, is among the most aggressive invaders in Gulf Coast ecosystems. Its rapid spread is facilitated by prolific seed production, avian dispersal, allelopathy, broad environmental tolerance, and strong post-disturbance rebound. Spoil islands may be particularly vulnerable due to high bird use and propagule pressure. Despite removal efforts, the extent to which initial invasion size influences native recovery and reinvasion remains poorly understood. This study examines the recovery and reinvasion of coastal plant communities following *Schinus* removal. We hypothesize that larger stands will exert more persistent impacts, resulting in slower recovery and elevated reinvasion risk. Vegetation surveys are conducted across 16 spoil islands adjacent to the Laguna Madre to quantify community composition across invasion coverage classes. Within 4 size classes, 1.5 x 1.5 m plots are surveyed following removal and one year later. Environmental drivers (PAR, soil properties, elevation, groundwater) are evaluated, and relationships between invasion extent and community composition are analyzed using NMDS and PERMANOVA. Invasion extent significantly structured community composition. Differences occurred between control and removal plots (Pseudo-F = 1.77, p = 0.041), and coverage class remained significant within both groups. Early post-removal communities were driven primarily by invasion extent, informing prioritization of high-impact stands when resources are limited.

# RESTORATION

## SESSION I

### **Assessing Monitoring of Living Shoreline Projects**

Narita Ramirez, Harte Research Institute at Texas A&M University–Corpus Christi, NOAA Center for Coastal and Marine Ecosystems-II Scholar

Living shorelines use natural materials, sometimes combined with structural elements, to stabilize eroding coasts while maintaining ecological function. Along the Texas Gulf Coast, these projects are implemented across bays, estuaries, and marsh-dominated shorelines and are expected to provide long-term ecological and structural benefits. Achieving these outcomes requires post-construction monitoring to evaluate shoreline stability, habitat development, maintenance needs, and environmental change. However, monitoring practices for living shorelines in Texas remain poorly documented. This study characterized post-construction monitoring across the Texas Gulf Coast using a practitioner survey questionnaire developed in Qualtrics XM. Practitioners included individuals involved in planning, designing, permitting, constructing, or managing living shoreline projects. Forty-nine responses were recorded, with 42 fully completed surveys contributing project-level data. Closed-ended responses were analyzed using descriptive statistics and Spearman correlations, and open-ended responses were coded inductively in MAXQDA. Monitoring practices varied across stabilization types (soft, hybrid, retrofit-soft, retrofit-hybrid). Hybrid and retrofit-hybrid projects reported more consistent monitoring, while soft and retrofit-soft projects more often had shorter or informal monitoring. Notably, 38% of practitioners indicated that living shorelines do not require post-construction monitoring ( $n = 42$ ). The highest-rated priorities for improvement were increased funding (57%) and clearer protocols (52%), followed by longer monitoring durations (40%). Overall, monitoring was frequently constrained by limited funding and permit-driven requirements rather than long-term performance objectives. These findings underscore the need for clearer guidance and sustained investment to support long-term project success in Texas.

# RESTORATION

## SESSION I

### **Shell by Shell: Community-Based Oyster Gardening for Ecosystem Recovery**

Amy Nowlin, Texas Sea Grant | Texas A&M AgriLife Extension

This project highlights the development and expansion of an oyster gardening program along the Texas Mid-Coast as a community-driven approach to coastal restoration. Oyster gardening involves the off-bottom cultivation of oysters in suspended cages maintained by volunteers at docks, piers, or waterfront properties. While not intended for consumption, these oysters serve as living infrastructure that improves water quality, enhances habitat complexity, and contributes directly to reef restoration efforts. During the 2025 season, the program was implemented across two bay systems—Matagorda Bay and Aransas Bay—each requiring separate permits, underscoring the regulatory considerations associated with Texas Parks and Wildlife. Participants were trained in oyster husbandry, monitoring protocols, and habitat stewardship to ensure consistency in data collection and maintenance. Gardeners tracked oyster growth, survival, and environmental conditions, generating baseline data to inform restoration strategies. Collectively, more than 2,200 oysters were relocated from gardens to targeted restoration areas, contributing to reef-building efforts and increasing local oyster populations. High survival rates and measurable shell accretion indicate that oyster gardening can serve as an effective method for producing viable oysters for restoration while engaging the community in active stewardship. Building on these outcomes, the 2026 season will incorporate spat-on-shell provided by Palacios Marine Agricultural Research (PMAR). This addition will support expanded data collection to evaluate recruitment success across environmental gradients and assess the potential for restoration in areas with historically low natural recruitment. This presentation will share outcomes and a strategy for scaling oyster gardening as a restoration tool along the Texas coast.

# RESTORATION

## SESSION II

### **Nueces Delta Shoreline Protection and Restoration**

Aaron Baxter, Coastal Bend Bays & Estuaries Program

The Nueces Bay Delta has experienced rapid shoreline erosion as a result of high winds, sea level rise, and a lack of sedimentation. To mediate this, rock breakwaters and dredged materials were used to restore historical saltmarsh habitats that have been converted to open water because of this erosive process. The dredged material was made available by the USACE's deepening and widening of the Corpus Christi ship channel to accommodate for larger vessels entering/exiting the Port of Corpus Christi. Material was pumped into several placement areas to re-establish marsh habitats in areas that have been converted to open water. Monitoring and research will guide adaptive management practices in the future to ensure the success of this restoration project.

### **Adaptively Managing an Oyster Reef Impacted by Dredged Material in Galveston Bay**

Kathy Sweezey, The Nature Conservancy

The Nature Conservancy, Galveston Bay Foundation, and Texas Parks and Wildlife Department developed a monitoring and adaptive management plan for Beezley Reef, an innovative part harvestable and part sanctuary oyster reef restoration project in Galveston Bay, Texas. The adaptive management plan was a crucial piece to this project and was instrumental in identifying causes for change in the condition of the reef post-restoration.

After the start of an adjacent construction project utilizing dredged material in 2023, project managers observed sediment accumulating on top of Beezley Reef. Oysters can face diminished reef structure and stress under 6 mm of sediment and inhibited spat settlement with as little as 1-2 mm of sediment. In accordance with the Beezley Reef adaptive management plan, additional monitoring strategies were implemented to assess the source of sediment and extent of buried reef. This presentation will highlight the additional monitoring strategies, results, and reaction to address negative impacts and best achieve both project goals.

The following lessons learned can be applied to all coastal restoration projects, especially those utilizing dredged material: 1) stakeholder involvement and partner collaboration can build greater support for projects with more robust adaptive management strategies, 2) set clear, quantifiable metrics and triggers within the adaptive management plan to provide the best guidance, 3) consider a combination of monitoring strategies to cross check data and address any changes in habitat condition swiftly, and 4) best management practices should be agreed upon before restoration begins to minimize negative impacts to habitat adjacent to project sites.

# RESTORATION

## SESSION II

### **Texas Coast Rookery Island Expansion and Protection—Benny’s Shack and Tern Island**

Eli Whitworth, HDR Engineering

Colonial nesting waterbirds and wading birds hold an important ecological role in coastal Texas ecosystems. The fluctuating population density of these birds can be indicative of environmental change within the coastal ecosystem. Currently, relative sea level change and erosion pose a great threat to the local ecosystem’s ability to sustain healthy populations of these critical bird species. Nesting habitats, namely rookery islands, have progressively eroded throughout the Texas coastline due to RSLC combined with wind-driven waves and passing vessel wakes. As part of the Coastal Bend Bays and Estuaries Program’s initiatives, Benny’s Shack and Tern Island have been part of an effort to expand existing nesting habitats and protect them from further erosion. This presentation will be in two parts. First, a representative from CBBEP will present on some of the ongoing work to protect and enhance nesting opportunities for colonial bird populations. This will be followed by a discussion from HDR on the design process, challenges when restoring rookery islands, and updates from the recent construction completion.

### **The Texas Wetland Action Mapping (Texas WAM) Plan and Tool: A Collaborative, Statewide Initiative to Protect and Restore Tidal Wetlands and Their Migration**

Charlotte Nash, The Nature Conservancy - Texas Chapter

Tidal wetlands are valuable coastal ecosystems, providing nursery habitat for commercially and recreationally important fisheries species, refuge for threatened and endangered species, and critical storm surge and flood protection benefits to people. Despite numerous efforts by partners to protect and restore tidal wetlands in Texas, they have been disappearing due to subsidence, sea level rise, erosion and coastal development. To minimize further tidal wetland loss in Texas, The Nature Conservancy and a broad coalition of 34 partner organizations are working together to implement the Texas Wetland Action Mapping (Texas WAM) project. This collaborative, science-based initiative coordinates statewide action and aims to catalyze collaboration and funding opportunities for tidal wetland restoration and conservation. A Texas Wetland Action Mapping Plan was developed in coordination with this working group and is the first statewide plan focused on tidal wetland conservation and restoration developed in recent decades. During a series of regional workshops and targeted planning sessions conducted over two years, the working group developed a shared set of goals and strategies and prioritized locations where working group members and partners could implement action. These action areas were selected using a participatory mapping process and the Texas Wetland Action Mapping Tool, developed by the Texas WAM project team to help guide wetland restoration and conservation investments across the coast. The Texas WAM Tool is available online to support wetland restoration and conservation planning at multiple scales or to advance the development of project ideas.

# WATER QUALITY

## SESSION I

### **Clean Coast Texas**

Madgellen Cleary, Texas Sea Grant

Clean Coast Texas is an initiative of the Texas Coastal Nonpoint Source Pollution Program aimed at improving water quality, enhancing coastal resilience, and promoting sustainable stewardship along the Texas Gulf Coast. This collaborative program brings together community partners, academic institutions, and environmental organizations, to address key challenges including nonpoint source pollution, habitat degradation, and increasing flood risk. The initiative works with coastal Texas communities to integrate nature-based solutions—such as wetland restoration, living shorelines, and green infrastructure—to reduce environmental impacts while supporting ecosystem services and community preservation. Through outreach, education, and applied research, Clean Coast Texas fosters community engagement and knowledge-sharing to support informed decision-making and improve standards for stormwater management and new developments. The program emphasizes accessible communication of water quality issues and encourages local participation in conservation efforts. This talk will highlight how Clean Coast Texas advances scalable, community-centered approaches to strengthen ecological health, reimagine existing and new development and reduce nonpoint source pollution in Texas coastal systems.

### **Hog Tide: Evaluating Wild Pig Fecal Pollution in Coastal Recreational and Oyster-Harvesting Waters**

Lydia Cates, Texas A&M University-Corpus Christi

Invasive wild pigs are found across Texas with an estimated 2.6 million of the United States' 6.9 million animals residing in the state. While detrimental ecological impacts of feral swine are well documented in terrestrial environments, marine waters used for recreation and mariculture remain unassessed. Wild pigs are known carriers of many different viral and bacterial pathogens that can infect humans; fecal pollution originating from these feral swine can harbor these pathogens in marine waters and contribute to the overall health risk for recreators as well as emerging oyster mariculture operations. We hypothesize that wild pig fecal pollution decreases water quality and adversely affects oyster mariculture. To test our hypothesis, water quality has been assessed over the course of a 12-month sampling period (January 2025-December 2025) along the Aransas River and Copano Bay. The assessment involved measures of water quality and fecal pollution. Water quality was assessed through measurement of environmental conditions, nutrient concentrations, and fecal indicator bacteria concentrations (*Escherichia coli* and *Enterococci*). The presence and abundance of swine-specific fecal pollution is currently being determined by microbial source-tracking (MST) using the Pig2Bac PCR marker. Preliminary results show fecal indicator bacteria concentrations as *Escherichia coli* having a mean of 292 MPN (most probable number) and *Enterococci* having a mean of 61.21 MPN, both averaged across all sites and through the sampling period. Early ddPCR results show trace amounts of wild pig fecal pollution detected in water and oyster samples collected with ongoing analyses expected to contribute further support and complete results expected soon.

# WATER QUALITY

## SESSION I

### **Tracking Blooms to Protect Bays: Expanding HAB Monitoring in Coastal Texas**

Dalton Tryba, Harte Research Institute at Texas A&M University–Corpus Christi

Harmful algal blooms (HABs) are a major concern along the Texas coast. HABs negatively affect the local economy by impacting tourism and businesses that rely on good water quality, such as oyster farms and fishing guides. At present, the Texas coast is especially vulnerable to the negative effects of HABs due to large spatial and temporal gaps in monitoring and early detection. This presentation will describe efforts underway to expand a HAB monitoring network in Texas, its associated challenges, and plans for future development. It will specifically focus on expansion of existing monitoring through deployment of Imaging FlowCytobots (IFCBs) at strategic locations to facilitate early detection of toxic species and to provide community composition data that will improve our understanding of local bloom drivers. IFCBs are flow cytometers that can image particles between  $<10\ \mu\text{m}$  and  $150\ \mu\text{m}$ . Once particle images are captured, artificial intelligence models are used to identify them. This expanded IFCB monitoring network allows us to provide early warnings about toxic species to state agencies and site partners, who in turn make management decisions to reduce risks to potentially impacted industries and communities.

### **Water Quality and Phytoplankton Dynamics in the Los Olmos–Laguna Salada Tributary of Baffin Bay, TX**

Lucero Barraza, Harte Research Institute at Texas A&M University–Corpus Christi

Since 1990, recurring blooms of the “brown tide” algal species *Aureoumbra lagunensis* have occurred in Texas’ Laguna Madre and Baffin Bay. Findings from a nearly 10-year time series suggest that one of the three tributaries of Baffin Bay, the Los Olmos Creek–Laguna Salada (LOLS) complex, regularly contains high biomass of *A. lagunensis*, even when biomass is low in the rest of the bay, indicating that it may function as an “incubator.” This study aimed to characterize water quality and environmental factors influencing phytoplankton dynamics in the LOLS through biweekly sampling at three sites. The study found that the LOLS exhibits key characteristics that favor the proliferation of *A. lagunensis*. It is shallow ( $<1\text{m}$ ), which likely enhances nutrient exchange from porewaters to the water column. Additionally, water circulation is primarily driven by wind, resulting in limited water exchange and prolonged residence times during calm periods. Moreover, all three LOLS sites exhibit hypersaline conditions (41–130), which are conducive to the survival of salt-tolerant and slow-growing *A. lagunensis* over other phytoplankton species. The Los Olmos sites also exhibited elevated dissolved organic nutrient concentrations, including dissolved organic nitrogen (DON:  $218.45 \pm 83$  and  $213.74 \pm 87.34\ \mu\text{M}$ ) and dissolved organic carbon (DOC:  $2892.25 \pm 999.1$  and  $2654.84 \pm 914.55\ \mu\text{M}$ ). Correspondingly, *A. lagunensis* biovolume was significantly higher at the upper tributary sites than at the downstream Laguna Salada. Results from this study contribute to our understanding of *A. lagunensis* bloom dynamics, aiding future monitoring efforts and helping to address water quality issues in Baffin Bay.

# WATER QUALITY

## SESSION I

### **Mapping Antimicrobial Resistance Genes Across the Baffin Bay Watershed**

Nora Bleth, Texas A&M University-Corpus Christi

Antimicrobial resistance, conferred by antimicrobial resistance genes (ARGs), renders critical antimicrobials and antibiotics ineffective against resistant microorganisms. Due to the global health implications, ARGs are increasingly being considered a form of pollution within the natural environment. Current research has examined resistomes in river and urbanized coastal ecosystems, leaving a gap in understanding for rural, hypersaline systems and watersheds dominated by agricultural land use. This project characterized the resistome of Baffin Bay, TX, using shotgun metagenomics on 144 water samples and assessing the geographic distribution, environmental drivers, and identity of antimicrobial resistance genes (ARGs). Baffin Bay, a hypersaline bay within a rural watershed, is well known as “the jewel of the Texas coast” for recreational water activities. In recent decades, the bay has undergone rapid declines in water quality, including brown tides, hypoxia, and fish kills. The results showed that San Fernando Creek had significantly higher ARG abundances and diversity compared to the bay and its two additional tributaries (Los Olmos and San Fernando Creeks). Seasonality had minimal impact on ARG diversity. Fecal pollution originating from cows, pigs, and humans was strongly correlated with ARG diversity, while traditional fecal indicator bacteria (FIB) were not. Aminoglycoside resistance and macrolide lincosamide-streptogramin (MLS) resistance maintained the highest relative abundances throughout the watershed. The dominant ARG classes confer resistance to antibiotics primarily used to treat livestock. Furthermore, our results suggest that land use is a primary determinant of resistome composition and diversity.

# WATER QUALITY

## SESSION II

### **Managing for Freshwater Inflows in the Coastal Bend**

Kristina Alexander, Endowed Chair for Marine Policy & Law, Harte Research Institute at Texas A&M University–Corpus Christi

Every five years Coastal Bend planners assess the area's freshwater supply and demand by municipal, industrial, irrigation, livestock, and steam-electric users. Coastal resources are not on that list, despite the significant contribution of fisheries to the Texas economy. This presentation will talk about how the Regional Water Management Plan discusses freshwater inflows, and why residents should pay attention.

### **Enhanced CO<sub>2</sub> Uptake and Primary Production After Cold Front Passage in Subtropical Texas Coastal Water**

Xinping Hu, University of Texas Marine Science Institute

Subtropical coastal ocean is generally considered as an overall CO<sub>2</sub> source to the atmosphere on an annual scale. Yet the effect of sudden weather reversal (i.e., frontal passage of cold air) on seawater CO<sub>2</sub> dynamics has not been examined, and its association with coastal productivity after the frontal passage is also not well understood. From an early winter (December 3-10, 2025) cruise on board R/V Pelican sponsored by the Texas Estuary Coastal Exchange (Texas-ECE) Project, we sampled high-resolution surface ocean CO<sub>2</sub> and ancillary data (salinity, temperature, dissolved oxygen, and fluorescence). The results suggest that the coastal ocean can be marked with two distinct states. First, during the frontal passage, surface water cooling along with water column overturning caused an initial CO<sub>2</sub> degassing, which was followed by CO<sub>2</sub> and dissolved oxygen undersaturation. This was caused primarily by the cooling effect under a physical process dominated state. Second, after the frontal passage, biological effect played a more important role as water column overturning presumably brought nutrients to the surface, which sustained CO<sub>2</sub> undersaturation (and dissolved oxygen supersaturation). Short-term disturbances like this can significantly modify the direction and strength of carbon fluxes by modulating biological activities in this freshwater-starved coastal area that lacks terrestrially derived nutrients.

# WATER QUALITY

## SESSION II

### **The Effect of Freshwater Inflow on Zooplankton Community Ecology in the Corpus Christi Bay and Aransas Bay Systems, Texas, USA**

Miles Jordan, Texas A&M University-Corpus Christi

Freshwater inflow drives zooplankton distribution and abundance in Texas estuaries. While physical displacement and salinity/temperature gradients are key, inorganic nutrients also critically influence community structure. This study employs community ecology analyses combined with hydrological and water column condition data to identify inflow effects. Two historical datasets on the Mission-Aransas, Nueces-Corpus Christi (Holland et al., 1975), and Colorado-Lavaca (Jones et al., 1986) estuaries were analyzed to provide insight into these patterns. Community structure was analyzed across average and long-term salinity gradients, seasonality, and rainy and dry seasons. PRIMER-e software and multivariate tools were utilized to evaluate community structure, e.g., SIMPER (species biodiversity), nMDS/ANOSIM (analyzed seasonal biodiversity during wet and dry periods), and PCA and BEST analysis (identified abiotic drivers). Results indicated species dominance fluctuated among seasonal patterns and wet and dry climatic periods. A total of 15 zooplankton species were analyzed. The most dominant species of both studies were *Acartia tonsa*, which were highly abundant in fall and summer, and Barnacle nauplii, which were highly abundant in the winter. Species fluctuations correlated with major flooding events.

Analysis of abiotic factors indicated that inorganic nutrients influence zooplankton community structure in both studies. Highest-ranking variables in Lavaca Bay were pH and Ammonia. In the Aransas and Corpus Christi Bay systems, the highest variables were temperature, nitrite, and nitrate. Thus, abiotic factors, e.g., inorganic nutrients, have an influence on zooplankton community fluctuations. Analyzing freshwater inflow will help evaluate the impacts of municipal, agricultural, and industrial water use on zooplankton community dynamics.

# WATER QUALITY

## SESSION II

### **Effects of Filtration Volume and Preservation Method on eDNA Recovery for Freshwater Mussel Monitoring in Texas Rivers**

Mizanur Rahman, School of Earth, Environmental, and Marine Sciences, University of Texas Rio

Grande Valley, Brownsville, Texas, USA

Environmental DNA (eDNA) analyses have emerged as a key method for monitoring aquatic biodiversity. This study evaluated how sampling protocols, including filtration material, preservation method, and filtered water volume, influence the recovery of environmental DNA (eDNA), comprising genomic DNA fragments shed by organisms into the environment, from water samples collected from freshwater river systems across Texas in conjunction with routine freshwater mussel monitoring. Water samples were collected during June 2025 field surveys from multiple rivers across locations with freshwater mussel assemblages: specifically, Pecan Bayou, the Colorado River, the San Gabriel River, and the Guadalupe River. Two filtration materials, Whatman membrane filters and glass fiber filters, were used to process 122 water samples. The filtration volumes ranged from approximately 100 to 2000 mL. DNAzol reagent or silica dry-bead desiccation was used to preserve filters. eDNA concentrations obtained from glass fiber filters were consistently higher than those from Whatman membrane filters. The greatest recovery of eDNA was achieved when glass fiber filters were preserved with DNAzol, which also produced the most reproducible and uniform concentrations across the various volumes that could be filtered. Conversely, Whatman filters containing dry beads yielded the lowest DNA concentrations and higher variation between samples. The filtration material and preservation strategy had a greater effect on eDNA recovery than the volume filtered. The method of glass fiber filtration followed by DNAzol preservation was the most efficient, demonstrating that optimized sampling protocols are needed for eDNA monitoring of freshwater mussel communities.

# WATER QUALITY

## SESSION II

### **Particulate Black Carbon as a Tracer for Estuarine–Coastal Exchange Processes**

Siddhartha Sarkar, University of Texas Marine Science Institute

Black carbon (BC) is ubiquitous in the environment and constitutes a significant fraction of the total organic carbon pool. The sources of BC in the environment are both natural (wildfires) and anthropogenic (fossil combustion and biomass burning). Due to its refractory nature, BC has been used as a robust proxy for reconstruction of paleo – fire activity in sediment core records, as it inherently preserves the source isotopic signatures. In this study we explored the potential of using particulate black carbon (PBC) as a tracer for estuarine – coastal exchange processes, especially the extent of estuarine influence on the coastal waters. Surface particulate matter was collected from the coastal Gulf of Mexico (GoM) along transects starting from the ship channel outlet near Port Aransas, during December 2025, as a part of the Texas Estuarine and Coastal Exchange (TEX-ECE) research cruise onboard the RV Pelican. The abundance and stable isotopic composition of PBC ( $\delta^{13}\text{CPBC}$ ) were measured utilizing the chemo-thermal oxidation (CTO-375) method followed by mass spectrometric analysis. Preliminary results showed a plume of PBC released from the ship channel into the coastal GoM, exhibiting a negative relationship with  $\delta^{13}\text{CPBC}$  which is indicative of a fossil source. The mouth of the plume near the ship channel indicated that the Texas estuaries (particularly the Nueces and Mission – Aransas estuaries) are a major source of BC to the coastal GoM. PBC as a conservative tracer exhibited that the estuarine fluxes persisted to ~ 20 km into the coastal waters. Vehicular emissions and shipping activities in the region are expected to be the major contributor of BC to the bay and estuarine waters. However, a detailed investigation of the BC dynamics in the Texas estuaries is highly warranted to constrain the dominant sources. This study established that BC is an efficient tracer for exchange processes at the estuarine – coastal interface and has the potential to advance our understanding of the associated fluxes of organic carbon given that PBC constituted 8 – 30 % of the particulate organic carbon pool.

# WATER QUALITY

## SESSION II

### **Tracking the Water “Releases”: How Freshwater Inflows to Nueces Bay Are Managed**

Adrien Hilmy, Coastal Bend Bays & Estuaries Program

Freshwater inflows are a critical driver of estuarine function, regulating salinity gradients, nutrient delivery, and sediment dynamics that sustain productive and diverse coastal ecosystems. Since the construction of Choke Canyon Reservoir in 1982, freshwater inflows to the Nueces Estuary have been carefully regulated to balance permitted water demands with environmental flow needs. This presentation will examine the regulatory framework that defines the sources, quantity, timing, and frequency of inflows to the estuary and will provide an overview of how these requirements have affected freshwater delivery.

## Nutritional Stress Leads to Developmental Dysregulation in Southern Flounder

Laura Sisk-Hackworth, University of Texas Marine Science Institute

Flatfish cultivation commonly results in pseudoalbinism which diminishes survival upon release and hinders conservation efforts. Multiple nutritional, rearing, and environmental factors have been implicated in pseudoalbinism. Given the variety of causes, pseudoalbinism has been hypothesized to result from different stress responses that dysregulate cell differentiation. Here, we used fatty acid (primarily omega-3 and omega-6) dietary supplementation, which reduces pseudoalbinism rates in flatfish, to investigate mechanisms through which nutritional stress leads to developmental dysregulation in *Paralichthys lethostigma* (southern flounder). We conducted bulk RNA sequencing of trunk samples and single-nuclei RNA sequencing of brain samples from pre-, mid-, and late-metamorphic fish fed diets with or without fatty acid enrichment. We found that nutritional stress (lower fatty acid levels) resulted in the greatest changes in the brain transcriptome during mid-metamorphosis, including in thyroid, insulin, and circadian signaling in the hypothalamus. However, the largest changes in the trunk transcriptome due to nutritional stress were seen in late metamorphosis and indicate that fatty acid deficiency increases oxidative stress, DNA damage, and dysregulation of circadian and thyroid signaling in the body. We conclude that nutritional stress due to lack of fatty acids alters the neural control of developmental pathways, potentially through mechanisms involving circadian, thyroid, and insulin signaling. These results point to possible mechanisms through which nutritional stress induces pseudoalbinism in aquaculture as well as the potential of fatty acid supplementation in minimizing developmental stress responses.

### **Widespread Declines in Black Skimmer (*Rynchops niger*) Nesting Across the Texas Coast Revealed by Five Decades of Colonial Waterbird Surveys**

Alexander Sharp, Coastal Bend Bays and Estuaries Program - Coastal Bird Program

Black Skimmer nesting colonies in Texas are mostly aggregated on natural and man-made islands within each bay and the Laguna Madre. Many of these sites have since either eroded away or have become too vegetated for Black Skimmers, leaving some bay systems with few suitable colony sites. In addition, this species is highly susceptible to discrete events that impact the colony, such as over washing events, human disturbance, and predators, further driving local population dynamics. Data on population trends in Texas are limited to a few outdated and local studies, thus identifying current trends using long-term survey data is essential for the conservation of this species. Here, we use long-term nesting abundance data derived from the Texas Colonial Waterbird Survey (TCWS), a standardized survey of all the waterbird colonies along the Texas Gulf Coast dating back to 1973, with general additive mixed-models to determine nesting population trends at the statewide, bay-level, and colony-level scales. Black Skimmer nesting populations in Texas have declined by 63.6% (40.2% to 77.8%) from the start of the survey to present day. In addition, Black skimmers have significantly declined within all major bay systems in Texas. Lastly, four individual colonies are significantly increasing, seven are stable, and 82 are significantly decreasing in nesting pairs. The results suggest that Skimmer population trends are non-linear, as population declines were greatest at the start of the survey, have slowed over time, and have possibly reversed slightly in the past 10 years, likely in response to management and restoration efforts.

### **Dividing the Resource Base: Trophic Niche Partitioning of Estuarine Planktivores in the Mission–Aransas Estuary**

Yasmina Shah Esmaeili, University of Texas Marine Science Institute

Estuarine ecosystems along the Texas Gulf Coast support diverse plankton-based food webs that underpin higher trophic levels, including ecologically and economically important species. Understanding how coexisting planktivorous consumers partition shared resources is central to predicting community structure and stability. We examined trophic niche partitioning among three planktivorous fishes—*Anchoa mitchilli*, *Menidia menidia*, and *Mugil cephalus*—along with the eastern oyster (*Crassostrea virginica*) from the Mission-Aransas Estuary, specifically at Copano East and Mesquite Bay. We applied multi-marker DNA metabarcoding targeting the 16S, 18S, and COI gene regions to achieve high-resolution identification of prey items spanning prokaryotic and eukaryotic taxa. In parallel, stable isotope analysis was incorporated to characterize longer-term trophic positioning and provide complementary insight into resource use. Preliminary observations suggest variation in dietary composition among coexisting consumers, consistent with niche differentiation within plankton-based food webs. Ongoing work extends these trophic linkages to higher trophic levels, including waterbirds, and integrates metabarcoding with stable isotope approaches to provide a more comprehensive understanding of plankton-based food webs in Texas estuaries under future environmental change.

### **Monitoring Ground-Nesting Snowy and Wilson's Plovers Along the Texas Coast**

Brooke Hill, Coastal Bend Bays & Estuaries Program - Coastal Bird Program

Since 2013, the Coastal Bird Program has been monitoring ground-nesting plovers on Mustang and North Padre Islands. Research activities include finding and monitoring Snowy (*Anarhynchus nivosus*) and Wilson's (*A. wilsonia*) Plover nests throughout the breeding season (February – July) to determine the ultimate fate of the nest. Yearly nest survival rates provide an insight into the productivity of each species. In addition, stewardship activities take place during each season, including installing symbolic fencing to protect high-traffic areas and speaking with visitors to sites and local events about the detrimental effects of disturbing nesting species. In 2024, more study sites were added along the Texas coast, in a joint effort to evaluate nest success and provide more widespread stewardship along the shores of the state. While the project is ongoing, we discuss results thus far and identify potential factors impacting these locally breeding plovers, including predators and precipitation.

### **Characterizing the Epizoic Diatoms on Texas Kemp's Ridley Sea Turtles: Why We Do It and What We've Learned So Far**

Matt Ashworth, UTEX Culture Collection of Algae, University of Texas, Austin

Marine vertebrates like cetaceans, sirenians and sea turtles are known to harbor biofilm assemblages on their skin and shells. The siliceous-shelled microalgae known as “diatoms” can be a significant component to those assemblages. Over the past decade of research, we have learned that some of these diatoms are only found in these epizoic habitats, that several distinct lineages of diatoms have evolved to an apparent exclusively-epizoic habitat and that some of these diatoms have even lost their photosynthetic capabilities. We still, however, have much to learn about the relationship between these diatoms and their hosts, spurring continued sampling efforts to determine the nature and effects of this epibiosis. As part of this effort, in 2025, diatom samples were collected from the skin and carapaces of nesting Kemp's ridley sea turtles at Padre Island National Seashore. These samples were preserved, cleared of organic material and mounted on permanent microscope slides to quantify and compare to samples collected from sea turtles of multiple species rescued and undergoing rehabilitation in Texas. Additionally, eight diatom species were isolated into culture from these collections. These cultures include *Achnanthes elongata*, a known obligate epizoic diatom which appears to have host-specific population structure in its genome organization and an undescribed taxon which appears to represent a new genus. All samples were collected under permit #PAIS-2025-SCI-0007.

## SEDIMENT PROCESSES & HYDRODYNAMICS

### Think Small?: Lessons Learned and Long-Term Adaptive Management of the Cedar Bayou Regional Fish Passage Project in Aransas County, Texas

Aaron Horine, PE, Anchor QEA

Cedar Bayou, a natural tidal inlet located near Rockport, Texas, has historically allowed water exchange between Mesquite Bay and the Gulf. Before 1979, Cedar Bayou was generally open and flowing, but both natural and anthropogenic events led to numerous closures and openings of the inlet. This area is also the breeding habitat for all of the estimated 536 “wild” endangered whooping cranes remaining. Following the opening of the inlet in 2014 a significant increase in the densities of estuarine-dependent species were observed in Mesquite Bay. Prior to the dredging, the area was virtually devoid of these species, indicating that the opening of this pass resulted in this drastic increase. Tidal inlets play a direct role in their productivity, sustainability, and ecosystem health. Most commercially or recreationally important species in the Gulf are estuarine-dependent. The most recent dredging operations have been large, costly, and slow-moving ventures, taking years to become active due to complex permitting and logistics. These dredging operations were also expensive, nearly \$10M in 2014 and \$9M in 2021-2022. These issues lead to the central question of this project: Is it be possible to periodically conduct smaller “micro-dredging” operations to prevent the need for these yearslong, multimillion-dollar dredging events? The current effort led by Anchor QEA, The Harte Research Institute, and The Coastal Bend Bays and Estuaries Program is being conducted to develop more naturally functioning dredging alternatives, beneficial use of the dredged material, and an amended biological opinion.

### Context-Dependent Carbon Dynamics of Oyster Reefs

Kelley Savage, Harte Research Institute at Texas A&M University–Corpus Christi

While vegetated blue-carbon habitats are well studied, oyster reef carbon budgets remain under-quantified despite widespread historical loss and, more recently, active restoration. Reefs trap fine sediments and bury organic carbon (OC), while carbonate production can vent CO<sub>2</sub>, making net CO<sub>2</sub> flux vary across tidal zones and adjacent habitats. We quantified OC and inorganic carbon (IC) stocks and burial rates across natural and restored eastern oyster (*Crassostrea virginica*) reefs in a subtropical estuary in northwestern Gulf of Mexico to determine their net CO<sub>2</sub> balance and its environmental controls. Net CO<sub>2</sub> fluxes (positive = source; negative = sink) were estimated by integrating OC and IC burial across reef types (restored vs natural, intertidal vs subtidal) and ages. Restored subtidal reefs (~5.5 yr) were near-term CO<sub>2</sub> sinks ( $-2.96 \pm 0.81$  Mg C ha<sup>-1</sup> yr<sup>-1</sup>), driven by OC burial ( $0.73 \pm 0.40$  Mg OC ha<sup>-1</sup> yr<sup>-1</sup>) and negative IC flux from early cultch dissolution. In contrast, natural intertidal (~355 yr) and subtidal (~2,238 yr) reefs were CO<sub>2</sub> sources ( $0.90 \pm 0.33$  and  $0.35 \pm 0.06$  Mg C ha<sup>-1</sup> yr<sup>-1</sup>, respectively) despite large legacy IC pools (>1,300 Mg ha<sup>-1</sup>). Sediment %OC increased with %mud (<63 μm), with the strongest relationship on restored subtidal reefs ( $R^2 = 0.82$ ). These findings show that young restored subtidal reefs can act as rapid CO<sub>2</sub> sinks at the reef-scale, whereas older natural reefs serve as long-term carbon repositories and CO<sub>2</sub> sources. These insights provide critical context for reef conservation, restoration design, and transparent coastal carbon accounting at estuarine to regional scales.

## SEDIMENT PROCESSES & HYDRODYNAMICS

### Next Generation of 3-Dimensional Ocean Modeling for Texas Bays: Development and Applications

Jiabi Du, Texas A&M University at Galveston

A new 3D high-resolution ocean model has been developed to replace the legacy 2D TxBLEND model used by the Texas Water Development Board since the 1990s. The new operational model, BAYCAST, covers all Texas bays within a single model grid and provides forecasts of hydrodynamic fields up to five days in advance. Forecasting products have been freely available to the public since 2025. The model has been extensively validated in terms of water level, velocity, salinity, and temperature under both normal and extreme weather conditions. It serves as an essential platform for freshwater inflow management and for supporting oil spill response by the Texas General Land Office. Here we present the challenges, solutions, and recent upgrades associated with this operational model. We also showcase a variety of fundamental research applications leveraging this reliable tool, including studies of microplastic transport, sedimentary and hydrodynamic responses to sea level rise, water exchange between bays and the coastal ocean, and salinity dynamics in response to brine discharge from desalination plants.

### Spatiotemporal Variability of Coastal Groundwater Discharge in Galveston Bay

Adelide Rianda, Texas A&M University at Galveston- Department of Marine and Coastal Environmental Science

Groundwater in coastal systems serves as a critical pathway for transporting terrestrial pollutants to marine environments, yet it remains poorly constrained in many estuaries. In Galveston Bay, the largest estuary in Texas, limited understanding of groundwater–surface water interactions has hindered accurate assessment of freshwater inflows along the Texas Gulf Coast. This study employed radon-222 ( $^{222}\text{Rn}$ ) as a tracer to quantify the spatiotemporal variability of coastal groundwater discharge (CGD) across the bay. Elevated  $^{222}\text{Rn}$  activities were observed in Trinity Bay, the eastern sub-basin, where CGD along the shoreline reached up to  $6.11 \times 10^4 \text{ m}^3/\text{day}$ , contributing  $\sim 7\%$  of total freshwater inflow into the system. CGD dynamics differed by hydrologic setting: discharge associated with major rivers (e.g., San Jacinto River) remained stable over diel cycles, whereas smaller creeks and bayous exhibited strong tidal modulation driven by hydraulic gradients. During flooding events,  $^{222}\text{Rn}$  variability increased and tracked tidal cycles, indicating enhanced hydrologic connectivity and tidally driven exchange between groundwater and surface water. CGD during spring tides was up to 32% higher than during neap tides. These results reveal highly dynamic CGD across spatial and temporal scales and highlight the need to incorporate groundwater inputs into coastal water and contaminant budgets. Future work will couple CGD estimates with contaminant fluxes and radium isotopes to better constrain groundwater-driven transport processes.

### EDUCATION, CITIZEN SCIENCE, AND COMMUNICATIONS

#### **Hooked on Conservation: Angler Perspectives and the Power of Citizen Science in the Texas Shore-Based Shark Fishery**

Jensen Smith, Texas A&M University-Corpus Christi

Recreational anglers play an important role in the conservation of coastal shark populations along the Texas coast and represent a valuable, yet underutilized, source of fisheries data. In recent years, collaborative outreach initiatives through the Texas Shark Rodeo and Sharkathon have demonstrated the value of citizen science programs by engaging anglers in promoting responsible shark handling practices, recording catches, and improving conservation awareness. These partnerships have become increasingly important as many shark species occurring in Texas waters remain data-limited through traditional fisheries assessments. Despite the growing popularity of these programs, relatively little is known about the motivations, attitudes, and knowledge of conservation issues of anglers participating in the Texas shore-based shark fishery. To better understand these perspectives, surveys were distributed during 2015-2025 to anglers participating in these tournaments along the Texas coast. Surveys examined angler experience, motivations for targeting sharks, harvest or release decisions, conservation attitudes, and awareness of recommended shark handling practices. Preliminary analysis of responses (n = 2007 responses) indicates that many anglers support catch-and-release fishing and recognize the ecological importance of sharks in coastal ecosystems, with over 50% of all responses reporting that knowledge of overfishing of sharks influences their actions when deciding whether to harvest or release a captured sharks. These results highlight the value of exploring angler perspectives in fisheries research and management. Collaborations with citizen scientists provides a way to increase much needed data for shark populations along the Texas coast, while also fostering stewardship of the coastal shark population.

#### **TMMSN Stranding Response: A Student Perspective**

Brynna Malley, TMMSN

This presentation highlights my internship experience with the Texas Marine Mammal Stranding Network (TMMSN) and explores the role of student involvement in marine mammal conservation and response efforts along the Texas coast. TMMSN's mission centers on responding to live and deceased stranded marine mammals, advancing scientific research, promoting public education, and contributing to the conservation of protected species in the Gulf of Mexico. As an intern, I assisted with critical care response for live-stranded dolphins, participated in necropsies to investigate causes of death, and supported various operational and outreach responsibilities. These hands-on experiences provided direct exposure to marine mammal health assessment, stranding logistics, field safety, and interdisciplinary collaboration among veterinarians, biologists, and trained volunteers.

# POSTER SESSION I PROGRAM

1 **Advances in Analytical Instrumentation and Applications: UTMSI Core Facilities**

Ryan Hladyniuk, The University of Texas at Austin- Marine Science Institute

The Core Facilities Laboratory at the University of Texas Marine Science Institute (UTMSI) has significantly expanded its research infrastructure with the addition of two advanced mass spectrometry systems: a Laser Ablation Isotope Ratio Mass Spectrometer (LA-IRMS) and a Triple Quadrupole Mass Spectrometer (TQ-MS). These instruments represent a leap in institutional capability, providing researchers with new analytical resolution and sensitivity. The LA-IRMS system (Sercon HS2022 interfaced with a Teledyne 213nm laser) enables high-precision, in-situ analysis of light stable isotopes (H,N,O,C,S) directly from solid materials. With spatial resolution down to the micron scale, the system allows for the minimally destructive, chronological mapping of sequentially deposited materials. This capability is essential for reconstructing environmental and life histories from samples such as fish otoliths, coral skeletons, tree cores, and rare archaeological artifacts where traditional bulk sampling is not possible. Adding to the Core Facilities Lab capability, is the Agilent 6495D TQ-MS paired with a 1290 Infinity III LC. This system offers ultra-trace quantitative analysis, achieving detection limits as low as parts per quadrillion. Its dual-stage mass filtering provides the selectivity required to isolate targeted compounds within complex matrices, facilitating critical research in environmental toxicology (including PFAS monitoring), metabolomics, and biomarker discovery. Available to principal investigators and user groups across departments, these instruments add to the existing capabilities at UTMSI. By providing spatial isotopic mapping and ultra-sensitive molecular quantification, the Core Lab now can support a broader range of multidisciplinary science.

### 2 **Comparing the Microbial Community Structure and Fecal Indicator Bacteria Between Sewage and Septic Systems**

Haley Stevens, University of Houston Clear Lake

Microbial source tracking (MST) is widely used to identify human waste in waterways. Sewage is generally used as a standard for human waste sources in MST applications; however, many communities use onsite wastewater treatment systems (OWTS). OWTS (septic tanks) are fundamentally different than municipal wastewater treatment plants and are suspected to be important sources of fecal contamination to many aquatic systems. Little is known about the microbial communities in OWTS. To address this, we compared microbial communities, by targeted metagenomics, and fecal indicator bacteria (FIB), by matrix-assisted laser desorption – time of flight mass spec (MALDI-TOF MS), between eight sewage and six OWTS samples. Two canine fecal samples served as controls. Metagenomic analysis was conducted by high throughput sequencing of amplicons generated with primers that target conserved regions of 16S rRNA genes. FIB was conducted by MALDI-TOF MS analysis of *Enterococcus faecium* isolates. At the phylum level, Camplobacterota and Proteobacteria dominated libraries generated from human waste but the ratio of Camplobacterota to Proteobacteria was consistently higher in sewage. Firmicutes and Fusobacteriota dominated the library generated from dogs. Cluster analysis of MALDI-TOF spectra produced coherent clusters that separated strains isolated from sewage and OWTS. Together these results suggest that the overall community structure and the FIB are different between sewage and OWTS. Investigators should use samples collected from OWTS as standards for tracking the source of fecal contamination in systems coupled to watersheds where OWTS are common.

### 3 Hydrographic and Carbon Isotope Variability Across an Inshore–Offshore Gradient in the Northwestern Gulf of Mexico

Lauren Bomer, University of Texas Marine Science Institute

The northwestern Gulf of Mexico experiences significant seasonal fluctuations in hydrographic conditions that influence both carbonate chemistry and pelagic calcifying organisms such as pteropods. Comprehensive spatial datasets linking estuarine outflow to offshore shelf conditions remain limited yet are critical for understanding environmental drivers of planktonic calcifying species distributions. Stable carbon isotopic ratios of dissolved inorganic carbon ( $\delta^{13}\text{C-DIC}$ ) provide insights into the relative contributions of riverine, oceanic, and biologically-mediated carbon sources in marine environments.

This research characterizes hydrographic conditions and water mass mixing across an inshore-to-offshore gradient from the Aransas Ship Channel to the Texas continental shelf break. During the TEX-ECE-01 cruise (December 2025), high-resolution vertical and horizontal measurements of salinity, dissolved oxygen, and  $\delta^{13}\text{C-DIC}$  were collected to characterize the region of influence of estuarine waters, infer mixing, and identify the contribution of estuarine inorganic carbon to coastal waters across this spatial extent. Mixing of water masses was characterized using salinity- $\delta^{13}\text{C-DIC}$  relationships. The data generated reflect the estuarine influence on shelf waters during winter conditions. Pteropod collections from this cruise will be analyzed alongside environmental data to identify thresholds limiting their distribution into estuarine-influenced waters. This work establishes a seasonal baseline for assessing the vulnerability of pelagic calcifiers and provides a scalable framework for larger surveys, such as NOAA's GOMECC-5, across the Gulf of Mexico.

### 4 **Post-Disturbance Mangrove Recovery: Propagule Colonization, Seedling Growth, and Stand Characteristics**

Hope Stowe, Texas A&M University-Corpus Christi

Mangroves, primarily *Avicennia germinans*, and salt marshes are essential for coastal resilience. In Corpus Christi Bay, mangroves have become dominant in some areas by reducing marsh species cover. However, increasing temperature-related disturbance events, such as Winter Storm Uri (Feb. 2021), greatly reduced mangrove dominance across the region. This has led to patchy recovery. Successful population recovery relies on propagule reproduction, dispersal, colonization, and seedling survival and growth.

I will present quantitative data on propagule densities, seedling growth rates, and survival at four sites in Corpus Christi Bay: TAMUCC-campus, Packery Flats, Stedman Island, and Sunset Lake. I will also compare pre- and post-storm mangrove stand structure and composition at each site to assess the extent of storm-driven change. Observational data were collected in 2019 by Mady Harvey, in 2021 by Philip Rivera, and in 2025–2026 by me. Together, these multi-year datasets provide a valuable long-term perspective on recovery dynamics. These results will help explain the dynamics of mangrove expansion and recovery. Understanding these changes will facilitate predicted shifts between mangroves and salt marshes as the environmental conditions change.

### 5 **Quantifying Hurricane Beryl Impact and Recovery of Texas Gulf Coast Dune Systems**

Kathryn Hardy, University of Houston - Department of Earth and Atmospheric Sciences

The Texas Gulf Coast has a long history of storm-driven erosion, and was most recently impacted by Hurricane Beryl, which made landfall in June 2024. This study compares UAV surveys of dune systems at West Galveston and Follet's Island to quantify immediate geomorphic and vegetative response to the storm, as well recovery over a one-year period. A combination of elevation differencing, volumetric analysis, NDVI-based vegetation matrices, and shoreline movement statistics derived from LiDAR and multispectral drone data was used to assess change. Hurricane Beryl caused significant erosion of both sites, with Follet's Island experiencing more severe losses. This was characterized by the complete removal of the coppice dune formation, extensive loss of vegetation cover, and an erosion gradient strengthening westward. West Galveston exhibited a combination of dune scarping and inland sediment redistribution, with overwash fans burying vegetation.

In the year following Hurricane Beryl, Follet's Island showed spatially variable recovery, with eastern foredunes surpassed pre-storm widths and western dunes remaining below initial levels. Coppice dunes have yet to re-establish, though vegetation density has increased. West Galveston continually lost sediment, with recovery hindered by ongoing anthropogenic erosion. Despite differing recovery trajectories, neither site met pre-storm standards within a year.

These findings highlight the influence of geomorphology and human activity on coastal resilience and provide insight for coastal hazard assessment and dune restoration strategies along the Texas Gulf Coast.

### 6 **Reconstructing a Historical Timeline of *Sargassum* Arrival on Mustang Island**

Nichole Dopp, University of Texas Marine Science Institute

Sargassum, a species complex of floating brown macroalgae, is a natural phenomenon that generates large mats during bloom conditions. These vital habitats in the open sea provide shelter and food to many marine species. Algal blooms developed historically in the Sargasso Sea and less often in the Gulf of America. In years with abundant Sargassum blooms, high biomass can wash ashore. Since 2011, dense and spatially extensive Sargassum blooms in the central Atlantic have become more prevalent. The Great Atlantic Sargassum Belt has led to the massive arrival of biomass on shores and coasts of the Caribbean Sea and Florida, including high biomass in the Gulf. Before 2005, it was impossible to monitor Sargassum via satellite imagery, leaving written records of visual observations as the main form of acquiring a history of Sargassum beaching events. Using archived data from oceanographer Tony Amos' Beach Observations (1985 to 2002), we constructed a time series of sargassum abundance along the coast of Mustang Island. This data, paired with recent reconstructions based on satellite imagery and the analysis of oceanographic conditions, can be used to better understand the causes of large sargassum blooms in the Gulf and elsewhere. Understanding the drivers of historical large sargassum blooms can help to better predict oceanic conditions that will lead to years of high sargassum biomass and beaching events.

### 7 **Assessing Effects of Wild Pig (*Sus scrofa*) Disturbance on Wetland Vegetation in South Texas**

Brenna L. Edwards, Department of Physical and Environmental Science, Texas A&M University-Corpus Christi

Wetland ecosystems are among the most productive systems globally and support high levels of biodiversity but can also serve as ideal hotspots for establishment and proliferation of non-native species. Wild pigs (*Sus scrofa*) significantly alter wetland environments through behaviors such as rooting and wallowing that reduce native vegetation cover, which can promote further invasions. The goals of this project are to evaluate the ecological effects of wild pig disturbance on inland freshwater wetlands and to assess how disturbance intensity influences vegetation recovery, diversity, and community composition. We hypothesize that areas subjected to high disturbance intensity will exhibit delayed vegetation recovery, differ in community composition and have lower native vegetation diversity. In 2026, a field experiment was established across ten freshwater wetland sites within Welder Wildlife Refuge in Sinton, Texas. Sixteen 2 m × 2 m fenced exclosures were paired with adjacent unfenced control plots (32 total pairs) in areas previously mapped for pig disturbance. Remote-triggered cameras were deployed for monitoring wild pig activity and distinguishing pig damage from that of native herbivores. Plant species richness, abundance, percent bare ground and species composition are surveyed monthly. Findings from this study will improve understanding of how invasive species influence wetland plant communities and recovery trajectories. Results will also provide insight into ecological resilience of wetlands and contribute to broader knowledge of invasive species impacts on sensitive ecosystems.

### 8 **Assessing the Role of Vegetation in Recovery of Texas Coastal Dunes Following Hurricane Beryl**

Celine Saïdy, University of Houston, Department of Earth and Atmospheric Sciences

Sand dunes act as a buffer to protect coastlines from erosion, but are themselves vulnerable to erosion due to disturbance from human activity and storms. The Texas coast is especially vulnerable to erosion because of high rates of sea level rise caused by subsidence in the region. A natural sand dune complex on the Texas coast can host a wide variety of natural grasses, succulents, shrubs, vines, and wildflowers. This vibrant plant community stabilizes the dune and also provides habitat to many local animals and visiting migrating birds. The exact composition and distribution of plant species is highly variable across the Texas coast's many beaches. Non-native plant species can also intrude into the dune system, and although they can still fulfill the role of trapping sand to grow the dune, they lack the specialized adaptations that native species do. Their capability to support the dune is doubtful. Emergency restoration efforts involve planting native vegetation species to help stabilize newly restored dunes. However, drone-based surveys conducted in May and July 2024 to map the immediate impact of Hurricane Beryl on six affected beach locations found that the two locations consisting of restored or artificial dunes experienced more foredune erosion during the storm. This project consists of an additional survey in Summer 2025 to study the recovery of each site one year after the hurricane, to observe how these trends vary between natural and restored dune systems, and to determine the role of the local plant community in the observed results.

### 9 **Elevated Temperature Triggers Increase in Global DNA Methylation, Cellular Apoptosis, and NO<sub>x</sub> Levels in the Gonads of Atlantic Sea Urchin**

Md Saydur RAHMAN, School of Integrative Biological and Chemical Sciences, University of Texas Rio Grande Valley, Texas, USA

Global warming is a phenomenon that is increasingly difficult to deny and has been linked to the increasing temperature of seawater. To understand the effects of feverish temperature on gonadal functions in marine invertebrates, Atlantic Sea urchins were collected from the Gulf of Mexico and placed in six aquariums (capacity: 20-gallon) with high temperatures (28 and 32°C) and a control variable (24°C) under controlled laboratory conditions. After one week of exposure to different temperatures, gonadal tissue samples were collected to analyze the effects of warmer temperatures on gonadal apoptosis and reproductive functions in sea urchins. Sea urchins exposed to high temperatures had the lowest gonadosomatic index compared to controls. High temperatures (28 and 32°C) markedly increased global DNA methylation (around 1.1–1.5-fold in testes and ~ 1.7-fold in ovaries) and 5-methylcytosine (5-mC) levels in gonads (around 2.7- to ~5.1-fold in ovaries and ~ 3.5- to ~6.2-fold in testes) compared with controls (24°C). The number of apoptotic nuclei in the gonads was much higher in the high-temperature groups. Caspase activity also increased significantly in gonads of high-temperature groups. Nitrate/nitrites (NO<sub>x</sub>, a biomarker of reactive nitrogen species) levels were increased around 2.6- to ~5.2-fold in testes and ~ 1.9- to ~3.8-fold in ovaries in high-temperature groups. Caspase activity was significantly increased in the ovary and testis of sea urchins exposed to high temperatures. Collectively, Collectively, these outcomes indicate that high temperatures drastically induce global DNA methylation, 5-mC expression levels, cellular apoptosis, and NO<sub>x</sub> levels in the gonads of Atlantic Sea urchin.

### 10 **Remote-Sensing-Based Mapping of Oyster Mariculture Suitability Along the Texas Coast**

Isabel Johnson, University of Texas Rio Grande Valley Ocean, Coastal and Earth Sciences Program

The Texas Parks and Wildlife Department (TPWD) has issued permits for oyster mariculture in Texas bays since 2021. Currently, selecting mariculture sites relies on proximity to existing sites or manual surveys. This approach can be inefficient, as it does not account for the environmental conditions required for optimal growth, such as turbidity, temperature, and nutrient levels. For commercial producers, it is vital to select sites where oysters grow quickly and reach marketable size in the shortest time possible.

In this study, we developed a remote-sensing-based Oyster Suitability Index (OSI) map of the Texas coast to serve as a resource for state permitting agencies and producers. Using Sentinel satellite data validated with in-situ samples, we created maps of spatially distributed seagrass at a 10 m pixel scale. Seagrass mapping is a critical component of this project, as seagrass exclusion is a regulatory requirement for site selection. Additionally, reflectance and field-based water quality data were used to estimate chlorophyll-a levels and water column turbidity. Landsat-based thermal data, combined with NOAA Tides and Currents portal data, were used to derive sea surface temperatures. These three parameters—per-pixel chlorophyll-a, turbidity, and temperature—were integrated to develop the OSI maps, which will be presented at the meeting.

### 11 **UAS Innovation for Environmental Monitoring and Cold-Stunned Sea Turtle Response**

Michael Kleine, Balcones Field Services, LLC (BFS)

Balcones Field Services, LLC (BFS) leverages unmanned aerial systems (UAS) to deliver efficient, high-resolution data collection and environmental monitoring across all phases of a project lifecycle. Traditional RGB imagery provides comprehensive visual documentation of project areas before, during, and after construction. Pre-construction flights establish baseline conditions, creating a clear understanding of existing site characteristics and target outcomes. During construction, aerial perspectives enable precise tracking of progress and rapid identification of deviations from design plans, allowing issues to be addressed early. Post-construction, UAV monitoring supports evaluation of revegetation success and erosion response, helping teams proactively manage concerns. By deploying UAVs, a single specialist can assess large linear projects in a single day, reducing time and risk of overlooked impacts. However, not all environmental issues are visible through standard RGB imagery. BFS integrates thermal UAV technology to detect anomalies such as unpermitted or unexpected discharges that may be difficult to identify during ground inspections. Thermal imaging reveals patterns that help pinpoint potential contamination sources, enabling faster response and minimizing environmental damage. This technology also plays a critical role in protecting Threatened and Endangered species in sensitive habitats by increasing wildlife visibility and allowing crews to halt activities before impacts occur. BFS continues to expand UAS applications, including using thermal and RGB imaging to locate sea turtles during cold-stunning events. This approach improves detection and guides rescue teams more efficiently, maximizing response success during critical periods.

### 12 **Geophysical Assessment of a Rangia cuneata Shell Midden: Karankawa Habitation and Coast Ecology**

Jarrett Kernen, Texas A&M University-Corpus Christi

The Karankawa people occupied the southern Texas coast between Galveston and Baffin Bay, leaving archaeological evidence of their presence through burial sites, hearths, pottery, and shell “middens”—discard accumulations composed primarily of shells, mussels, lithics, and potsherds. Numerous midden sites have been documented along the coast and within the Welder Wildlife Refuge (WWR). When considered together with sites near Rockport and elsewhere along the Coastal Bend, they suggest a pattern of seasonal movement between coastal and inland environments. In 2019, an undocumented site exhibiting exposed *Rangia cuneata* shells was identified approximately 24 miles inland along the Aransas River. The presence of estuarine clam shells this far inland raises questions about transport, resource use, and the seasonal mobility of Karankawa groups. Because the site appears largely undisturbed, non-invasive geophysical methods offer an effective means of investigating its structure while preserving its integrity. Ground-penetrating radar and related geophysical techniques may allow mapping of the lateral extent, thickness, and internal stratigraphy of the midden, providing insight into the scale and duration of habitation at the site. Improved methodology with such analysis could help clarify patterns of inland seasonal occupation and contribute to a broader understanding of Karankawa land use across the southern Texas coastal plain.

### 13 **Investigating Fertilization Rates of Hybrid Eastern Oysters in Texas**

Kate Gomez-Rangel, Harte Research Institute at Texas A&M University–Corpus Christi

The eastern oyster, *Crassostrea virginica*, is a valuable benthic organism that plays a crucial role in ecosystem services and economically supports commercial fisheries and aquaculture industries. In the Gulf of Mexico (GoM), research on the genetics of the eastern oysters is limited, leaving significant gaps in scientific knowledge about these organisms. The GoM offers a unique environment along the Texas coast, characterized by varying salinity and temperatures across multiple bays. Previous research indicates that eastern oysters in Texas are divided into two populations with distinct environmental tolerances, including a genetic transition zone where naturally occurring hybrid oysters can be found. This project investigates the fertilization rates and growth characteristics of larval hybrid oysters and the development of adult oysters at a local oyster farm in Corpus Christi Bay to compare the growth rates of oyster populations and their hybrids. Preliminary findings reveal hybrid oyster populations have presence of reduced genetic compatibility due to differences in the parental genomes and poor gamete quality, which can hinder fertilization success. However, the findings of this research provide essential insights to inform selective breeding programs in Texas aquaculture, as well as support local conservation strategies and fishery management plans for these important species.

### 14 **Benthic Invertebrate Communities in Live Versus Dead Mangrove Stands**

Emily Letner, Texas A&M University-Corpus Christi

*Avicennia germinans* (black mangroves) are a subtropical/tropical coastal species found in Texas estuaries that are ecologically important systems. Black mangroves store carbon, protect against storm surge and coastal erosion, and provide habitat for many birds, fish, and invertebrate species. Many benthic invertebrate species, such as polychaetes, bivalves, and gastropods, live in and on the substrate of mangrove stands. This group has limited mobility, making them key indicators of climate change in the places they inhabit. Major disturbances to habitat structure and function will likely have a major impact on this group. This study proposes to examine how benthic invertebrates may be affected by comparing live and dead mangrove stands. Within Redfish Bay, located in Port Aransas, Texas, two distinct sites have dead stands (likely due to an extreme freeze event) and live stands. Two synoptic sampling events will take place during ecological times of high and low stress. At random points, five benthic invertebrate cores will be taken, two sediment cores for organic carbon content and soil texture analysis, and environmental parameters such as soil temperature, soil salinity, and light availability will be measured. We expect to see a richer community and greater abundance within live mangrove stands due to more stable soil temperatures, higher abundance of organic carbon, and a higher percentage of silt and clay, as these materials retain organic matter compared to sandy soils. Understanding how benthic invertebrate communities shift with changing environments will inform post-disturbance management decisions.

### 15 **Impact of *Mulinia lateralis* on Phytoplankton Biomass and Community Composition in Baffin Bay, Texas**

Kalie Tovar, Harte Research Institute at Texas A&M University–Corpus Christi

Baffin Bay, a lagoonal estuary located in South Texas, has been experiencing symptoms of eutrophication over the past 3-4 decades, including a doubling of chlorophyll-a, recurring *Aureoumbra lagunensis* (“brown tide”) blooms, hypoxia, and fish kills. These symptoms threaten the bay’s popular recreational and commercial fisheries, generating stakeholder interest in exploring solutions. One proposed method, requiring further study, is stocking the bay with Dwarf Surf Clams (*Mulinia lateralis*), a dominant bivalve filter feeder known to consume *A. lagunensis* from laboratory studies, making it an important consideration as a possible control for algal blooms. This study quantified the impact of *M. lateralis* filtration on phytoplankton biomass and community composition by conducting in-situ seasonal mesocosm experiments. Two treatments were employed, including treatments: 1) with addition of *M. lateralis* at naturally occurring abundances, and 2) a control without *M. lateralis*. Results from fall and winter experiments showed no consistent effect of *M. lateralis* on total chlorophyll a or size fractionated chlorophyll a. Reductions in the <2  $\mu\text{m}$  size fraction occurred in the *M. lateralis* treatment in fall, but not winter. No obvious changes in size-fractionated chlorophyll a were seen in winter. The fall experiment showed a community shift from diatoms to dinoflagellates and ciliates in the *M. lateralis* treatment, but in winter experiments, dominant taxa remained unchanged. Further experiments are planned for spring and summer, when *A. lagunensis* blooms are more pronounced, which will be useful for determining if *M. lateralis* can be utilized in water quality restoration methods by controlling *A. lagunensis* abundance.

### 16 **Tracking Coastal Water Quality Through Surfrider Citizen Science**

Maryam Sharafeldin, Texas A&M University-Corpus Christi

Coastal water quality monitoring is essential for protecting public health in communities where recreational ocean activities such as surfing, swimming, and fishing are common. The nonprofit Surfrider Foundation seeks to fill gaps in water quality monitoring by facilitating a citizen science program titled Blue Water Task Force (BWTF) that collects and analyzes coastal water samples for fecal indicator bacteria (FIB). This study examined weekly water samples collected from three recreational beach locations in Corpus Christi, TX and quantified enterococci using the IDEXX enterolert method. Enterococci concentrations were compared to the Texas Beach Action Value to assess the health risks associated with exposure. Environmental variables including turbidity, water temperature, rainfall, and human and animal presence were also recorded to evaluate potential predictors of bacterial contamination. Results indicated significant variation in enterococci concentration across years, with higher bacterial concentrations occurring following rainfall. Enterococci concentrations were also positively correlated with turbidity. Additionally, this project incorporated student-led activities through TAMU-CC Surfrider chapter, such as volunteer-based water sampling, storm drain marking, and coastal cleanups. These efforts strengthened the connection between environmental monitoring and community-driven prevention strategies, reinforcing the role of citizen science in protecting coastal public health. Citizen science programs such as the Blue Water Task Force expand the availability of water quality data and improve public access to information about recreational water safety. By combining environmental microbiology with community engagement, this project contributes to a better understanding of coastal water pollution and supports efforts to protect both environmental and public health.

### 17 **Tracing Human Impact: Linking Fecal Contamination and Antimicrobial Resistance in the Baffin Bay–Upper Laguna Madre**

Isabella F. Cevallos, Department of Life Sciences Texas A&M University-Corpus Christi

The Baffin Bay-Upper Laguna Madre (BB-ULM) system is a hypersaline estuary in South Texas that supports productive fisheries, coastal recreation, and regional economies. Declining water quality has led to harmful algal blooms, fish kills, seagrass loss, and elevated fecal bacterial contamination, endangering ecosystem and human health. Despite these trends, there's no existing framework to characterize the microbial footprint of human influence, particularly regarding antimicrobial resistance genes (ARGs), leaving a critical data gap in understanding emerging risks. With microbial source tracking (MST), this study addresses that gap by linking general fecal contamination, human-associated fecal contamination, and an indicator of ARG contamination and anthropogenic pollution. Monthly water collection across twelve sites in the BB-ULM will quantify enterococci, the human-specific fecal marker HF183, and the class 1 integron-integrase gene (*intl1*). The *intl1* gene facilitates the rapid horizontal gene transfer of ARGs among bacteria and is widely regarded as an indicator of anthropogenic pollution due to its strong correlation to human-associated contamination. By analyzing the co-occurrence of these indicators, this study evaluates whether areas with elevated human fecal load correspond with increased ARG contamination. Results from this study will establish a baseline for the Upper Laguna Madre, bridging spatial data gaps and providing evidence for *intl1* as a practical indicator in systems that lack ARG monitoring. This study advances the foundation for integrating fecal contamination tracking with ARG tracking. Ultimately, this research will advance monitoring frameworks for hypersaline estuaries and support science-based conservation and restoration efforts in ecologically and economically important coastal systems.

### 18 **From Garden to Reef: Oyster Gardening for Coastal Restoration in Texas Bays**

Olivia V. Houston, Department of Rangeland, Wildlife and Fisheries Management, Texas A&M University, College Station

Oysters play a key role in creating ecologically resilient bays through shoreline stabilization, improved water quality, and enhanced habitat. Oyster gardening, a community-based restoration approach where coastal residents (gardeners) cultivate oysters in suspended cages with recycled shells, has the potential to support oyster populations in Texas. The Mid-Coast Texas Master Naturalist Oyster Gardening project evaluates oyster gardening as a tool for restoration. The pilot of this project, in the Matagorda and Aransas Bay systems, provided 16 participants with 28 bags of shell. Each gardener received technical training in cage maintenance, data collection, and predator removal. During weekly maintenance, gardeners recorded recruitment, growth, and survival. Over 2,200 oysters were successfully cultivated during the six-month project window. In November 2025, gardeners returned their cages to AgriLife Extension, and oysters were relocated to Dog Island Nature Preserve and Goose Island State Park. Initial observations of high recruitment and survival rates indicate that oyster gardening can serve as an effective and scalable restoration tool. The 2026 season will incorporate spat-on-shell substrate provided by Palacios Marine Agricultural Research in bags allocated to gardeners. This will allow for comparison between hatchery-supported and natural recruitment. Gardeners will have the option to monitor additional environmental conditions, including water temperature and salinity. After a six-month period, gardeners will return bags to AgriLife Extension, and oysters will be relocated to designated conservation sites within each bay system. These results will inform the effectiveness and scalability of oyster gardening as a community-based restoration strategy in Texas bays.

### 19 **Potential Toxicity of Polystyrene Microplastic Uptake by Immune Cells**

Krishna Veni Chikkula, Texas Southern University-Houston

In today's world, the widespread presence of microplastics is undeniable, with concentrations found in various environments, including up to 1000 particles per liter in seawater and up to 10 particles per cubic meter in the atmosphere. Microplastics have become pervasive environmental contaminants, raising increasing concern about their potential effects on human health, particularly on the immune system. Among immune cells, B lymphocytes play a critical role in adaptive immunity, yet the impact of microplastics on their function remains insufficiently understood. This study investigated the effects of 4.5  $\mu\text{m}$  polystyrene microplastics (PS-MPs) on human B cells, focusing on cell viability, metabolic activity, cytoskeletal integrity, and oxidative stress, as well as the involvement of the PI3K/Akt/FOXO1 signaling pathway. In vitro exposure of B cells to PS-MPs at concentrations of 100, 200, and 400  $\mu\text{g}/\text{mL}$  over 24, 48, and 72 hours resulted in a clear dose- and time-dependent decline in viable cell numbers. This reduction was supported by MTT assay findings, which showed a consistent decrease in metabolic activity, suggesting mitochondrial dysfunction. Furthermore, fluorescence imaging revealed significant disruption of actin filament organization, accompanied by morphological alterations and compromised structural stability. A notable increase in intracellular reactive oxygen species (ROS) levels was observed following PS-MP exposure, indicating that oxidative stress is a key driver of cellular damage. Correlation analysis further demonstrated strong associations between elevated ROS levels and impaired cellular functions, including reduced viability, disrupted cytoskeleton, and diminished metabolic performance. These findings suggest that PS-MPs exert immunotoxic effects on B lymphocytes primarily through oxidative stress-mediated mechanisms, potentially involving dysregulation of the PI3K/Akt/FOXO1 signaling axis. Overall, this study highlights the importance of understanding microplastic-induced immune alterations and underscores the need for further research into their long-term health implications.

### 20 **Using Long-Term Data to Assess Comprehensive Reef Health: A Case Study in Copano Bay, TX**

Lindsey Savage, Texas Parks and Wildlife Department - Coastal Fisheries

This study presents a conceptual framework for establishing an oyster habitat degradation threshold by integrating biological, structural, and environmental metrics commonly collected in fisheries-independent sampling programs. Traditional monitoring programs have emphasized oyster abundance and harvest data but often exclude physical habitat metrics necessary for evaluating long-term reef resilience. By combining biological indicators with structural and environmental metrics, this framework aims to provide a more comprehensive approach to assessing reef condition and restoration potential. Using long-term Texas Parks and Wildlife Department monitoring data from Copano Bay, Texas, we analyzed relative abundance of live oysters, oyster spat, and oyster shell across multiple reefs from 1986 to 2016. System-wide 25th and 75th percentile values were calculated for each metric to define thresholds classifying reefs as degraded, moderately degraded, or healthy. These thresholds were then applied to more recent data (2012–2016) to assess current reef condition and identify patterns of degradation across the bay system. Results indicated spatial variability in live oyster abundance among reefs, while spat abundance was generally high during the recent assessment period. In contrast, shell abundance indicated greater degradation across a high number of reefs. Vertical relief, used as a proxy for reef structure and persistence, was evaluated using 2013 side scan sonar and echosounder data and compared among reefs using a digital elevation model, revealing several reefs with reduced relief relative to surrounding structures. Additionally, an oyster restoration habitat suitability index was applied using salinity, temperature, and dissolved oxygen data, indicating moderate to high restoration suitability across reefs. This multi-metric framework offers a potential approach for identifying degradation thresholds and informing oyster reef restoration prioritization.

### 21 **Modeling of Microplastic Distribution in Sediment From a Matagorda Bay Saltmarsh**

Lydia Thurman, College of Science and Engineering and Environmental Institute of Houston, University of Houston-Clear Lake

Establishing the spatial distribution and quantities of microplastics in saltmarshes is important for understanding their role in the ecosystem. Here, we use an isolated saltmarsh from the Matagorda Bay region to evaluate microplastic quantity and distribution from the shoreline to the high marsh. First, we describe microplastic concentrations in surface sediment from exposed (e.g., shoreline and channel) and marsh (e.g., lower and upper marsh) habitats. Then, we identify potential patterns of microplastic distribution using a geospatial interpolation model. Twenty-one surface sediment samples (exposed  $n = 10$ ; marsh  $n = 11$ ) were collected from a saltmarsh adjacent to Coon Island Bay in Matagorda Bay. Samples were processed through a standardized stepwise procedure in the lab including wet sieving (5-mm to 100- $\mu\text{m}$ ), density separation (40 ppt NaCl solution), organic digestion (30%  $\text{H}_2\text{O}_2$ ), and visual enumeration under a stereomicroscope. Across all samples, 193 microplastic particles were enumerated including fibers ( $n = 131$ ), fragments ( $n = 58$ ), and other types ( $n = 4$ ). Overall, microplastic quantities were highest within exposed habitats (by almost 3x on average). Modeling this data will reveal potential trends and implications in how microplastics are distributed throughout the saltmarsh. Future modeling efforts can be aimed at extrapolating microplastics at a 3D scale, a larger 2D scale, or incorporating additional variables that may influence microplastic dispersion. Our work fills knowledge gaps in the distribution and accumulation of microplastics within Texas bay saltmarshes and informs local habitat management decisions, while simultaneously evaluating the potential of spatial modeling techniques on microplastic quantities.

### 22 Developmental Effects of PFAS on Early Life Stage Southern Flounder

Kaci Craddock, University of Texas Marine Science Institute

Per- and polyfluoroalkyl substances (PFAS) are a class of compounds that are known as “forever chemicals”. PFAS have widespread applications in military, industrial, and residential uses, and have become so extensive, they are now detected in water, soil, air, and even the food we eat [2]. Ongoing research has linked PFAS exposure to higher risks of health issues, including cancers [1]. Mechanisms enabled by the PFAS chemical structure include endocrine disruption, leading to epigenetic changes and immunosuppression [1]. Previous work in the Nielsen Lab at UTMSI has found PFAS contamination in estuarine systems along the Texas Gulf Coast. With evidence suggesting the exposure risk to PFAS is more widespread, research is being done to determine effects on fish species that utilize these estuaries as nursery habitats. Previous work in the Nielsen Lab showed significant impacts of PFNA on sheepshead minnow (*Cyprinodon variegatus*) development. PFNA is a PFAS commonly detected in estuaries. We examined the morphological development of embryonic and larval Southern Flounder (*Paralichthys lethostigma*) exposed to environmentally informed concentrations of PFNA. Flounder are distributed in the Northern Gulf of Mexico [3]. Along with their commercial and recreational value, flounder occupy niches as benthic ambush predators, targeting zooplankton and small fish. Their role in ecosystems as mid-level consumers mean they occupy a higher trophic level and therefore have greater risk as bioaccumulators of PFAS. Embryos and larvae were exposed to PFNA over a 96-hour period, before being imaged and analyzed using ImageJ. Our data showed how young fish develop under contaminated conditions.

### 23 **Bioaccumulation of Inorganic Pollutants of South Texas Water in Common Bottlenose Dolphins (*Tursiops truncatus*)**

Jamie Larson, Department of Life Sciences - Texas A&M University-Corpus Christi

Marine mammals act as important sentinel species for monitoring coastal environmental health and seafood quality. This study quantified the bioaccumulation of Environmental Protection Agency (EPA) primary inorganic chemical contaminants of water in the skin of post-mortem common bottlenose dolphins (*Tursiops truncatus*). Skin samples (0.5-1.5 g) were collected from 101 dolphins of varying ages, stranded along the South Texas Gulf Coast, and subjected to physicochemical preparations including excision, cleaning, dehydration, and chemical digestion (Methods EPA 200.3 and Anton Paar MW 5000). The concentrations of inorganic contaminants (i.e., antimony, arsenic, barium, beryllium, cadmium, chromium, copper, lead, mercury, selenium, and thallium) were then quantified ( $\mu\text{g/L}$  or ppb) by inductively coupled plasma-optical emission spectroscopy (ICP-OES) following EPA guidelines (Methods 200.7 and 6010D). The resulting bioaccumulation levels were compared to the EPA Maximum Contaminant Level (MCL) standards for drinking water (2-50  $\mu\text{g/L}$ ). Several contaminants (e.g., antimony, lead, mercury, and selenium) were detected at median concentrations approaching or exceeding EPA MCL thresholds. Demographic comparisons suggested that adult dolphins generally exhibited greater bioaccumulation of contaminants compared to younger age classes ( $p < 0.005$ ). These findings indicate that inorganic contaminants are present at concerning levels in the South Texas Gulf Coast waters and confirm bottlenose dolphins as indicators of ecosystem health.

### 24 **Accumulation and Distribution of Microplastics Across South Texas Barrier Islands**

Lauren Garrett- Texas A&M University-Corpus Christi

My research investigates the presence and distribution of microplastics along the barrier-island beaches of the Texas Gulf Coast, with initial sampling focused on Mustang Island and comparative work beginning on Padre Island. Microplastics are tiny pieces of plastic, generally smaller than a bottle cap, that originate from the breakdown of larger plastic debris and are now commonly found in oceans, beaches, rivers, and lakes, where they may be ingested by marine organisms and move through the food chain. This study assesses the presence and distribution of microplastics by visually identifying and counting fragments visible to the naked eye across several beach environments along a beach profile, near Beach Marker 145 on Mustang Island, including the foredune, back beach, berm, forebeach, and rack line facies. Mustang Island is a high-energy barrier island shaped by wind and wave processes, and repeated surveys allow comparison of where microplastics accumulate across these coastal zones. Preliminary observations suggest higher concentrations of microplastics in the berm and near the base of the foredunes, where wind and water processes concentrate lighter debris. This reconnaissance-style approach focuses on identifying problem areas of visible plastic contamination and provides a qualitative baseline that may guide the design of a more robust and statistically rigorous sampling project in future research.

### 25 **The Use of Spectral Reflectance to Detect Stress in the Marine Algae, *Ulva lactuca***

Fernando Lopez, The University of Texas Rio Grande Valley

Spectroradiometers are instrumental in agricultural research for collecting spectral reflectance data from plants, which enables the evaluation of yield, health, and soil or crop quality. As aquaculture technology advances, the application of spectroradiometers to detect spectral reflectance data may offer valuable insights for aquafarming practices. To assess their effectiveness in aquaculture, a study was conducted on *Ulva Lactuca*, where specimens were subjected to various stressors in a controlled experiment lasting one week. After one week, the spectral reflectance data was compared to chlorophyll levels of each specimen. The treatments included high salinity (60 ppt), nitrogen deficiency (No  $\text{NaNO}_3$  75 g/L dH<sub>2</sub>O), low salinity (15 ppt), alongside a control group. Chlorophyll levels and weight were collected pre- and post-experiment; spectral reflectance data was gathered for each treatment. Results revealed significant differences in spectral reflectance compared to the control group. However, variations among treatments were relatively minor. These findings indicate that spectroradiometers are useful in detecting stress in *Ulva Lactuca* but are limited in identifying the specific stressors causing the observed effects.

### 26 **Preventing Marine Debris Through Community-Based Monofilament Recycling in Texas**

Alexis Sabine, Texas Sea Grant

The Monofilament Recovery and Recycling Program (MRRP), established in 2004 by Texas Sea Grant (TXSG), addresses the issue of discarded fishing line in Texas waterways. Monofilament can remain in the environment for centuries, posing entanglement risks to sea turtles, birds, and other marine and coastal wildlife. The MRRP mitigates fishing line pollution through a recycling program and by promoting responsible disposal practices through targeted angler education. More than 330 recycling tubes are currently installed across Texas, with an additional 100 planned for 2026 (explore locations at [tx.ag/monomap](https://tx.ag/monomap)). Strategically placed at fishing access points and fishing-related businesses throughout the state, these stations provide anglers with convenient disposal options, preventing fishing line from entering marine and freshwater ecosystems. The program diverts over 220 pounds of monofilament line from the environment annually. Volunteers and partner organizations are essential to the MRRP. They install and maintain recycling stations, collect and prepare used line for recycling, and report collection data. They ship the recovered line to Berkley Conservation Institute, where it is repurposed into products such as tackle boxes and spools. Volunteers also engage in community outreach and coastal cleanup efforts to raise awareness and reduce marine debris. Currently, 29 partner organizations support MRRP efforts from Sabine Pass to South Padre Island and at inland sites as far north as the Dallas region. Through these collaborative efforts, the MRRP continues to reduce pollution and promote sustainable fishing practices across Texas waters.

# POSTER SESSION II PROGRAM

1 **Human Impact and Habitat Type Drive Shorebird Prey Availability and Composition on the Texas Gulf Coast**

Julia Berliner, UT Austin Dept of Integrative Biology

The Texas Coast provides crucial foraging habitat for 98% of North America's long-distance migratory bird species, including endangered shorebirds. Migratory birds are an important facet of the local ecotourism economy, but this region has also experienced land use change that could affect habitat quality. It is unclear how anthropogenic impacts may affect availability of invertebrate prey for birds. Here, we characterized potential invertebrate prey communities of shorebirds and investigated how their abundances and composition vary across habitats and human impact. We sampled infauna (meiofauna) and epifauna (insects) at two mudflats and one beach frequented by shorebirds during winter (Port Aransas Nature Preserve, Packery Flats, and Padre Island National Seashore). Within these sites, organisms were collected from minimally and highly impacted areas along the waterline and high tide line during low tide. In mudflats, we found infauna and epifauna were more abundant in wet sediment along the waterline than in dry sediment along the high tide line. Highly impacted areas previously disturbed by vehicles also had lower infauna abundances, while epifauna abundance varied only with habitat (sediment moisture). Likewise, we found significant variation in community composition of infauna in highly impacted areas, while epifauna community composition varied by habitat only. Our findings indicate infauna, which reside in sediment, are more sensitive to anthropogenic impacts on their habitats, while epifauna, being more mobile, may recolonize impacted areas more quickly. These findings also indicate changes to mudflat inundation due to human activities or changing storm regimes are likely to impact shorebird habitat quality.

### 2 **Winter Carbonate Chemistry of the Western Gulf of Mexico Shelf: Observations From R/V Pelican, December 2025**

Rosemarijn van de Lint, University of Texas Marine Science Institute

The western Gulf of Mexico (wGOM) continental shelf remains critically undersampled with respect to seawater carbonate chemistry, particularly during the winter months. To address this data gap, samples were collected on an early winter research cruise aboard the R/V Pelican from December 8–12, 2025, sponsored by the Texas Estuary Coastal Exchange (Texas-ECE) Project. Water sampling was carried out along five radial transects extending into the gulf from the Port Aransas Ship Channel, covering a total of 33 stations across the wGOM shelf. At each station, water column samples were collected from surface, bottom, and intermediate depths, for total alkalinity (TA), dissolved inorganic carbon (DIC), and pH analyses, yielding 81 discrete samples. Winkler titrations were performed to calibrate and correct dissolved oxygen (DO) data obtained from the conductivity-temperature-depth (CTD) sensor package. These observations represent a valuable contribution to the sparse wintertime carbonate chemistry record of the wGOM shelf, and will support ongoing efforts to determine seasonal variability in air-sea CO<sub>2</sub> exchange and coastal ocean acidification dynamics in this understudied region.

### 3 **Seasonal In Situ Photosynthetic Performance of the Seagrass *Thalassia testudinum* in South Texas**

Hannah Januszka, University of Texas Marine Science Institute

Seagrass meadows are vital components of coastal ecosystems. These submerged plants promote sediment stabilization, support fisheries, and contribute towards long-term carbon storage. However, reduced light availability is threatening seagrass persistence and distribution by constraining photosynthesis. In the Gulf of Mexico, sea level is rising approximately three times faster than the global average, directly reducing light delivery to the benthos. Eutrophic conditions have also led to an increase in drift macroalgae and epiphytic growth, shading out seagrasses and further compromising photosynthetic production.

*Thalassia testudinum*, a climax species, is of particular interest to investigate because of its robust physiology and perennial life history. *T. testudinum* forms dense, persistent meadows and boasts a thick root and rhizome system, allowing it to bind sediments more effectively, support more complex food chains, and sequester more carbon for prolonged periods compared to ephemeral species such as *Halodule wrightii*.

This study aims to quantify the seasonal in situ photosynthetic performance of *T. testudinum* in Corpus Christi Bay to confirm the light saturation levels necessary for optimal physiological function. These measurements are the basis of future experimental work that examines seagrass carbon budgets with respect to above and belowground sinks and the release of dissolved organic matter into sediments.

### 4 **Language as a Tool for Conservation: Evaluating Marine Protected Area Policies Across Nations**

Travis Moon, Texas A&M University

Marine Protected Areas (MPAs) have rapidly expanded as the leading primary conservation tool for marine life, yet there are uneven performance outcomes across governance outcomes. While previous research has focused on management capacity and ecological outcomes, the role of legal terminology used in legislation remains unexplored. The study asks: Does the legal terminology used in legislation creating marine protected areas affect policy success? To address this question, a comparative framework that integrates legal text analysis, along with peer-reviewed evaluations of MPA outcomes. Case studies include Australia, Palau, the United Kingdom, the United States, and Norway. Legislative texts are analyzed using quantitative and discourse-based methods to identify patterns in enforcement, prohibitions and allowed uses, stakeholder involvement, and adaptive management. Policy outcomes are classified as successful, mixed, limited, or not successful based on documented ecological, socio-economic, and governance performance reported in the literature. Preliminary findings suggest that variation in enforceability and legal clarity may be associated with the differences in MPA Outcomes, with more directive language corresponding to more consistent policy performance. However, this analysis remains ongoing and emphasizes association rather than causation. By linking legal terminology to policy effectiveness, this study aims to contribute a novel perspective to marine conservation policy design.

### 5 **A Long-Term Assessment of Seagrass Habitat and Recovery in the La Quinta Channel, Texas**

Anastasia Canu, University of Texas Marine Science Institute & Texas A&M University-Corpus Christi

Seagrass meadows are critical coastal habitats that provide ecosystem services such as sediment stabilization, water quality improvement, and habitat for many well-known estuarine species. However, dredging and channel modification can alter these systems through changes in ways such as seagrass metrics, bathymetry, sediment composition, and water clarity. This study represents a continuation of long-term monitoring efforts of a created seagrass bed in the La Quinta Channel, Texas, where the most recent assessment was conducted approximately ten years prior in 2015. The objective of this study is to evaluate present-day habitat conditions and assess seagrass recovery within a grass bed that was previously impacted by dredging activities.

Field surveys consisted of three complementary approaches: a hexagonal grid-based survey to assess spatial patterns in seagrass distribution, transect-based sampling aligned with the previous assessment to allow for temporal comparison, and bathymetric surveying to characterize seafloor elevation. We evaluated seagrass percent cover and canopy height using standardized quadrat methods. In situ water quality parameters were collected using a conductivity-temperature (CT) sensor. We also collected sediment samples for grain size analysis (lab work in progress).

Preliminary results indicate limited seagrass presence within the survey area, with most sampling locations characterized by bare substrate. Bathymetric variation and sediment characteristics suggest that physical habitat conditions may be constraining recovery. This work contributes to ongoing seagrass monitoring efforts and provides insight into long-term seagrass response following physical disturbance.

### 6 **Texas Estuarine–Coastal Exchange: A Preliminary Examination of the Juvenile Fish Communities Along an Inshore–Offshore Gradient Centered on the Aransas Pass**

Sofia Armada Tapia, University of Texas Marine Science Institute

The Texas Gulf Coast is home to a diverse fish community that supports regionally important fisheries. Several estuarine-dependent fish species exhibit complex life cycles that involve movements between coastal and estuarine habitats, such as migrating from estuaries to spawn offshore or within coastal bays. As part of the TEX-ECE (Texas Estuarine Coastal Exchange), a UTMSI interdisciplinary project that focuses on understanding estuarine-coastal exchange through the Aransas Pass in the Texas Coastal Bend, we examined the juvenile fish assemblages along an inshore-offshore gradient during the winter of 2025. From December 7th to 13th, the continental shelf off Aransas Pass was sampled on board the R/V Pelican cruise. Demersal fishes were collected using a 2 m beam trawl for 15 min at 42 stations across 7 transects. Physical environmental properties of the bottom were recorded with a CTD at each station. The community composition of juvenile fish exhibited an inshore-offshore gradient, with snappers, flatfish, and drums showing the highest abundance. Ongoing analysis will examine species-specific distributions as a function of depth, environmental parameters, and estuarine vs. coastal waters. Understanding the connectivity between offshore and estuarine habitats could assist fisheries and resource managers in making decisions to promote sustainable management of coastal fisheries.

### 7 **Potential of Carbon Sequestration by Coastal Texas Oyster Reefs**

Wyatt Prappas, University of Texas Rio Grande Valley

With the threat of rising global carbon dioxide levels, the search for effective carbon sinks is intensifying. The ocean is the world's largest carbon sink. Carbon sequestered within marine structures and ecosystems is referred to as 'blue carbon.' While studies have shown that coastal mangroves, seagrasses, and saltmarshes actively sequester large quantities of blue carbon, recent research suggests that oyster reefs may be an underestimated shallow-water ecosystem with the potential to passively sequester carbon, despite lacking vegetative components.

In the present study, carbon measurements were collected across the Texas coast to examine the sequestration potential of oyster reefs. Sediment core samples were taken from transects around selected reef sites, processed according to the IUCN Blue Carbon Manual, and run through an elemental analyzer to determine organic carbon percentages. These data were used to determine if there is a higher accumulation of blue carbon on oyster reefs compared to control sites. The results of this study are presented as evidence that oyster reefs function as blue carbon ecosystems—a finding that could benefit Texas's growing oyster mariculture industry and encourage the conservation of existing reefs.

### 8 **The Investigation of Shorebird Trophic Ecology Through a Combination of DNA Barcoding and Stable Isotope Analysis of Fecal Matter**

Mary Finch, University of Texas Marine Science Institute

The Texas Gulf coast is located within the Central American flyway, a major route for birds that migrate between their overwintering grounds in the south and their breeding grounds in the north. This behavior is particularly common among shorebirds which include near-threatened species like the Piping Plover and the Dunlin that spend most of the winter months in South Texas. Shorebirds that overwinter along the Texas coast need to fatten up for their eventual flight north for the summer breeding season. Thus, the habitat and food resources available to these species are vital to their seasonal breeding success and their long-term population persistence. Despite this, very little is known about the diet of shorebirds overwintering along the Texas coast. Though shorebirds are often thought of as generalists, recent studies have shown that certain species rely on divergent and sometimes unexpected food sources like biofilm. The current study uses a new combination of DNA barcoding and bulk stable isotope analysis of shorebird fecal material and potential prey items to investigate the trophic ecology of four shorebird species that overwinter in Texas. We show that combined barcoding and isotope analyses of fecal material provides an effective, non-invasive approach to quantifying shorebird trophic ecology. The majority of fecal samples were located within the isotopic space delineated by potential carbon sources. Finally, preliminary findings show substantial niche overlap between species and a potentially important role of small mobile insects like shore flies as a prey source for shorebirds that overwinter along the Texas coast.

### 9 **Legacy Wells and Leakage Risk in Corpus Christi Bay**

Marques Bowden, Texas A&M University-Corpus Christi

This poster will examine the legacy of oil and gas wells across the Corpus Christi Bay system and the environmental questions that come with aging well infrastructure in a dynamic estuarine setting. The bay and surrounding coastal plain have supported more than a century of hydrocarbon exploration and production, leaving behind a landscape that still bears the marks of earlier industrial activity. Numerous wells—active, inactive, abandoned, and in some cases orphaned—are scattered across the coastal landscape and shallow bay margins. While modern drilling and plugging standards are designed to prevent fluid migration and protect groundwater resources, many older wells were constructed under earlier regulatory frameworks and engineering practices. In addition to concerns about potential leakage pathways, portions of the coastal environment still contain aging wellheads, structural remnants, and scattered industrial debris that create a form of visual pollution within an otherwise fragile and scenic coastal waterscape. This research compiles and evaluates well records from the Texas Railroad Commission to characterize the population of legacy wells within the Corpus Christi Bay coastal system. Using maps, photographs, and specific field examples, the poster will highlight the distribution and condition of these wells and draw attention to locations that may warrant further monitoring, remediation, or cleanup.

### 10 **Integrating Environmental Drivers of Energetic Performance Into Bull Shark Nursery Habitat Suitability**

Cali Falkenstein, Texas A&M University-Corpus Christi

Energetic performance in estuarine predators is linked to environmental gradients such as salinity and temperature, which influence activity and behavior. By modulating Overall Dynamic Body Acceleration, these conditions affect foraging success, predator evasion, and patterns of estuarine habitat use. Using tri-axial accelerometers for field-based biologging is essential for revealing how animals use energy in dynamic estuarine environments. Texas estuaries are threatened by rising temperatures and elevated salinities that can alter activity patterns and favor flexible movement strategies (behavioral plasticity). Juvenile bull sharks (*Carcharhinus leucas*), a Species of Greatest Conservation Need, rely on estuaries during early development where salinity and temperature shift and are uniquely capable of tolerating low salinities. This combination of physiological tolerance and habitat complexity makes estuaries ideal for examining how environmental variability shapes energetic performance and habitat suitability. In this research, machine learning algorithms will classify behavioral states from accelerometry data and generate performance curves linking energetic metrics to environmental conditions. Behavior-informed Habitat Suitability Models will integrate energy expenditure, environmental data, and Texas Parks and Wildlife Department (TPWD) long-term fishery-independent survey catch data. Forecasting habitat shifts under warming and increased salinity (drought) scenarios will provide managers with actionable science into how climate change may alter critical nursery grounds. This will strengthen tools for TPWD and federal agencies responsible for managing estuarine and coastal ecosystems by directly linking species' occurrence to environmental conditions that support optimal energetic performance, providing insight into when and where coastal areas should be prioritized for protection under increasing temperatures and drought-driven salinity change.

### 11 Carbon and Sulfur Coupling on Alkalinity Dynamics in a Subtropical Estuary

Aneena P Raju, University of Texas Marine Science Institute

Estuarine sediments rich in organic matter and nutrients produce excess alkalinity through anaerobic remineralization reactions in the sediment, primarily through sulfate reduction and coupled reduced sulfur formation. However, oxidation of the reduced species (product of sulfate reduction) can consume alkalinity and generate acids when exposed to oxygenated conditions. The occurrence and intensity of these reactions are highly dependent on hydrological conditions as rivers deliver terrestrially produced organic carbon (allochthonous) and nutrients, which drive estuarine productivity (autochthonous). Therefore, hydrological conditions play a crucial role in net alkalinity generation in sediments.

This study examines the changes in hydrological conditions on reduced sulfur burial and associated alkalinity production in Mission-Aransas Estuary, a semi-arid lagoonal estuary in the northwestern Gulf of Mexico. During the study period from August 2021 to August 2022, this estuary experienced a gradual drying trend, as shown by a monotonic salinity increase, following a significant freshwater pulse in mid-2021. During this period, alkalinity initially increased, peaking at intermediate salinity before declining. Interestingly, sulfate  $\delta^{34}\text{S}$  values exhibited an inverse pattern, reaching minimum values at mid-salinity. This covariation is attributed to a combination of reduced sulfur oxidation, sediment carbonate dissolution, and evaporation.

To assess long-term (~100-year) hydrological impact on alkalinity production, we also analyzed sedimentary reduced sulfur concentrations and isotopic compositions of both organic carbon and carbonate. The data reveal a significant correlation between carbonate  $\delta^{18}\text{O}$  and reduced sulfur concentration, supporting the hypothesis that higher freshwater enhances sulfur burial and alkalinity generation. However, isotopic evidence suggests that the estuary has been experiencing a trend toward increasing drought over the studied timeframe.

### 12 **Identifying Migration Timing and Spawning Grounds of Southern Flounder in South Texas**

Jacob Robinson, Harte Research Institute at Texas A&M University–Corpus Christi

Southern Flounder are among the most popular sportfish in Texas, but the stock has declined since the 1980s, leading to their listing as a species of greatest conservation need. Southern Flounder are known for their annual spawning migration; however, specific details about timing, partial migration, spawning habitat, and other aspects of migration remain unknown. The objectives of this study are to identify the timing, probability, and environmental cues of migration for Southern Flounder tagged in the Upper Laguna Madre using acoustic telemetry. The study will also use satellite telemetry to better characterize putative spawning grounds, which have only been vaguely described as “offshore.” In Fall 2025 and 2026, 50 acoustic tags will be deployed in adult Southern Flounder (>376mm TL). An array of acoustic receivers will provide detection data to identify emigration events and determine whether these events align with the seasonal fishery closure to protect mature flounder migrating to spawn offshore. In Fall 2026, 11 pop-up satellite tags (PSATs) will be deployed on large adults (>500mm TL) captured between Aransas Bay and Upper Laguna Madre. Pop-up locations and maximum likelihood geolocation tracks will be used to identify offshore spawning habitat, while depth and temperature sensors in the PSATs will be used to characterize these variables during the offshore spawning period. The findings of this study will promote sustainable management of Southern Flounder by addressing data deficiencies about important life history events and aiding in the evaluation of current management measures.

### 13 **Platform-Based Piston Coring Enables Insights Into the Estuarine Deep Biosphere**

John E. Hinkle, University of Texas Marine Science Institute, University of Texas Center for Planetary Systems Habitability

Estuarine sediments harbor extensive microbial communities that influence marine and global biogeochemical cycling. Studying the microbiology and biogeochemistry of these sediments requires pristine, undisturbed sediment cores, which cannot be recovered by methods that are often employed in sedimentological research (i.e., vibracoring, rotary coring). Many use gravity coring; however, gravity cores rarely penetrate to >0.5m sediment depth in shallow water (<3 m depth). This is because the free-fall distance is too short to generate enough momentum for deeper penetration. In addition, many estuarine sediments contain sand and shell layers that are difficult to penetrate by gravity alone. Thus, our understanding of the microbial biosphere in estuarine sediment is largely based on surface sediments. Here, we demonstrate the use of an UWITEC Niederreiter piston coring platform, that has been used extensively to recover sediment cores to up to 20 m sediment depth in lakes, to recover subsurface estuarine sediments from several bays along the Texas Coastal Bend. The current maximum extent of our coring efforts is to ~9.6 meters below seafloor (mbsf) in Aransas Bay. From these cores, we were able to collect bulk sediment and porewater samples at a 20-centimeter resolution for a suite of molecular and geochemical analyses. To our knowledge, this is the first successful deployment of an UWITEC Niederreiter piston coring platform in an estuarine setting. Over the coming years, we plan to use this platform to investigate sediment microbial communities, and the biogeochemical processes they perform, throughout estuarine mud layers on the Texas coast.

- 14 **Winter Population Density of Marsh Periwinkles (*Littoraria irrorata*) in Galveston, Texas**  
Harrison Taylor, Texas A&M University at Galveston

*Littoraria irrorata* serves as a bioindicator of salt marsh ecosystem health through its predation by *Callinectes sapidus*. Due to lower *C. sapidus* predation, *L. irrorata* becomes an important prey in winter. Surrounded by the maritime industry, *L. irrorata* living in the Galveston salt marsh is exposed to anthropogenic environmental pressures. *L. irrorata* populations are expected to be higher than average with increased *C. sapidus* prey availability during the winter. We surveyed the Galveston East-End Lagoon coast at noon over three days spread across December, January, and February. A 1m<sup>2</sup> transect was used to isolate and collect *L. irrorata* over eight sample days. Collected *L. irrorata* were counted in buckets. Sample locations were randomly selected and varied along the waterline and further inland. Density ranged from 0- 209 individuals per m<sup>2</sup>. January had the most updated sampling of *L. irrorata* totaling 639, while February had the lowest at 307. The recorded mean population density is concurrent with recent population density studies after the Deep Water Horizon oil spill, indicating that *L. irrorata* abundance does not significantly increase during winter in the Galveston salt marsh. *L. irrorata* abundance indicates steady prey availability for *C. sapidus* in the Galveston East-End Lagoon.

- 15 **Assessing the Physical Toll of Fisheries Interactions on Bottlenose Dolphins (*Tursiops truncatus*) in the Texas Coastal Bend**  
Jonah Smith, Texas A&M University-Corpus Christi

Human-wildlife interaction is an increasing concern in the Gulf of Mexico, yet data on dolphin interactions with inshore Texas fisheries remains scarce. The Texas Coastal Bend features a high abundance of dolphins and immense fishing pressure. Dolphins frequently interact with fisheries and are exposed to injuries from vessel strikes and entanglement in fishing gear. Characterizing anthropogenic injuries is critical for regional management. This study proposes a methodological framework to rigorously assess the type, source, and position of fisheries-related injuries on dolphins in the Texas Coastal Bend. Boat-based surveys were conducted in the Texas Coastal Bend between 2023 and 2026 to collect photographs of dolphin bodies. Individual dolphins were identified by unique markings on their dorsal fins using FinFindR software. Criteria for categorizing scars were selected from published literature on injuries indicative of fisheries interactions. High-quality images representative of each visible body part category (dorsal fin, rostrum, head, caudal peduncle, and flukes) per individual dolphin were selected for analysis. An interrater reliability test was conducted on 200 images using Cohen's Kappa. Validating our classification methodology ensures that subsequent scar analysis will provide an accurate assessment to inform regional management of the physical impacts of fishing gear on dolphins in the Texas Coastal Bend.

### 16 **Vegetation Abundance and Ecosystem Functionality of Natural vs. Created Marsh Sites in the Nueces River Delta, Texas**

Maggie McLaughlin, University of Texas Marine Science Institute

The proposed project aims to examine and compare the ecological multifunctionality of natural and created marshes (~39 years old) in the Nueces River Delta (Corpus Christi, TX). Along the Texas coast, marshes are particularly susceptible to habitat loss due to accelerating rates of sea level rise, frequent tropical storms, and low sediment supply. A customary practice used to counteract wetland habitat loss and restore ecosystem functioning is “beneficial use dredge placement.” However, the metrics of success for these restoration projects largely focus on short-term vegetation growth and omit additional key indicators of functionality such as belowground biomass, infaunal community composition, and soil biogeochemical processes over longer time scales. Thus, the long-term resilience and provisioning of ecosystem services may often be overestimated for these created marshes. The project goals are to determine (1) the ecological health and functionality of a created marsh site in the Nueces River Delta beyond vegetation growth and (2) to assess if adjacent natural marsh sites have continued to maintain their ecological functionality over time based on multi-decadal observations and historical measurements. We used vegetation cover, infauna abundance, bird presence, and biogeochemical parameters collected during historical and modern monitoring efforts to calculate a multi-criteria functionality index for both natural and created marsh habitats. Preliminary results show an increase in ecological similarity between natural and created sites, but biogeochemical characteristics remain underdeveloped in dredge placement sites. The findings of this study will provide insight into the long-term success of dredge material use for regenerating functional marsh habitat.

### 17 **Monitoring, Modeling, and More: The Coastal Science Program of TWDB**

Alex Barth, Texas Water Development Board - Coastal Science

For over 50 years, the Texas Water Development Board (TWDB) has maintained a data collection and analytical study program focused on understanding the freshwater inflow requirements necessary to maintain productive bays and estuaries. This Coastal Science Program was originally designed to support environmental flows, as part of the water planning function of TWDB, and now also provides important data and modeling tools which benefit oil spill response and flood planning in Texas. TWDB uniquely provides estimates of freshwater inflows to the bays and estuaries spanning 85 years (1941 – present). Estimates rely on measured streamflow data and modeled flows from the agency’s Texas Rainfall-Runoff hydrologic model. The TWDB recently upgraded our hydrodynamic model to BAYCAST, a 3D system build on SCHISM, which provides simulated water levels, currents, temperature, and salinity for the entire Texas coast. To support characterization of freshwater inflow conditions and calibration and validation of the models, TWDB maintains a coastal water quality monitoring network with 40 years of data (est. 1986; <https://www.waterdatafortexas.org/coastal>). Several new initiatives are also underway, including transitioning to a modern HEC-HMS hydrologic modeling framework; expanding hydrodynamic modeling capabilities of BAYCAST to include flood inundation modeling; developing ecological models to support adaptive management of freshwater inflows; completion of an estuary drought index dataset and dashboard; and integrating remote sensing products into core research workflows. This poster encourages all to explore and utilize the available datasets and tools developed and maintained by TWDB’s Coastal Science program.

### 18 **Seasonal Variation in Per- and Polyfluoroalkyl Distribution in an Estuarine Ecosystem Downstream of Municipal Wastewater Outfalls**

Caitlin Neill, University of Texas Marine Science Institute

Per- and polyfluoroalkyl substances (PFAS) are persistent and mobile contaminants frequently detected in aquatic environments downstream of municipal, industrial, and military facilities. While regional and environmental factors influence PFAS concentrations, the role of seasonal variation in estuarine systems remains underexplored. To address this data gap, we conducted a study assessing seasonal dynamics of PFAS in an urbanized Texas estuary receiving effluent from six municipal wastewater treatment plants (WWTPs). At each outfall, three downstream locations were sampled quarterly, allowing for analysis of seasonal patterns in PFAS occurrence, composition, and partitioning behavior. Water and sediment samples were collected alongside key environmental variables (e.g., salinity, dissolved organic carbon) to examine how seasonal shifts in water quality influence PFAS fate and distribution. The results highlight significant seasonal fluctuations in PFAS concentrations and profiles across sampling sites, underscoring the importance of temporal variability in understanding PFAS behavior in estuarine ecosystems. These findings enhance our understanding of how seasonal processes affect PFAS transport, fate, and ecological exposure in wastewater-impacted coastal environments.

### 19 Integrating Traditional and Molecular Methods for Monitoring *Perkinsus marinus* (Dermo) in Galveston Bay Oysters: Preliminary Results

Drew Eisenbach, College of Science and Engineering and Environmental Institute of Houston, University of Houston-Clear Lake

Eastern oysters (*Crassostrea virginica*) are a foundational species in estuarine ecosystems throughout the Gulf coast. Populations are threatened by *Perkinsus marinus*, the protozoan parasite responsible for Dermo disease which contributes to oyster mortality. A lack of recent long-term data and monitoring limits our understanding of the Dermo infection dynamics necessary for effective oyster reef management in Galveston Bay. While Ray's Fluid Thioglycollate Method (RFTM) is the most widely used diagnostic method for detecting and quantifying Dermo infections, quantitative polymerase chain reaction (qPCR) is of growing interest to resource managers. This study compares Dermo infection rates in wild oysters from Galveston Bay using both RFTM and qPCR methods. Oysters were collected bi-monthly through routine monitoring. To date, 220 oysters have been sampled from five regions exposed to differing salinity and environmental conditions between November 2025 and April 2026. Sampling locations included five fixed index reefs, previously designated as "sentinel" monitoring sites, and five randomly selected reefs that varied between sampling periods. Tissue samples were analyzed using RFTM (n = 220) and qPCR (n = 160). Preliminary results indicate that both diagnostic methods detect Dermo infection, with qPCR identifying infections in some oysters where Dermo was not detected by RFTM. Bi-monthly sampling will continue through November 2026 to assess seasonal variation in infection prevalence and evaluate the influence of environmental conditions on parasite detection. These findings will provide insight into diagnostic performance and contribute to the development of standardized protocols for long-term monitoring in Galveston Bay and other Texas estuaries.

### 20 **Burning for Better Waters: How Can Fire Be Used to Promote Coastal Resiliency in Texas Communities?**

Brandon Smith, Environmental Institute of Houston, University of Houston-Clear Lake

Restoration strategies that reintroduce natural disturbances, such as prescribed fire, are increasingly recognized for enhancing ecological function, coastal resilience, and hydrologic processes in coastal prairie systems. Fire reduces woody encroachment, promotes native vegetation recruitment, and generates biochar which is a stable, carbon-rich material with high porosity that enhances soil water retention, nutrient storage, and microbial activity. These properties improve soil structure, reduce nutrient loss from freshwater runoff, and influence biogeochemical cycling, with implications for groundwater recharge and water quality. Biochar also contributes to long-term carbon sequestration, while offering a cost-effective alternative to pile burning by converting low-value woody biomass into a beneficial soil amendment that can be produced on-site. Additionally, biochar is an emerging potential method for the adsorption of recent pollutants of concern, such as micro- and nano-plastics. Despite these benefits, few studies have quantified how woody encroachment and associated litter accumulation alter interception storage capacity and downstream hydrologic processes in coastal systems. Here, we propose a foundational framework for how evaluation of soil condition, vegetation composition, fire history, and woody encroachment may interact to influence hydrology, groundwater recharge, and nutrient transport. We share findings from other coastal environments outside of Texas to demonstrate the ecological and practical benefits of integrating biochar production into prescribed fire regimes. Our goal is to develop and incorporate similar strategies for Texas bays and estuaries through collaboration with government and non-government natural resource managers, like a prescribed burn association. This will allow us to facilitate community-led partnerships focused on enhancing coastal ecosystem resilience.

### 21 **Salinity-Driven Variation in Phenotypic Traits of *Spartina alterniflora* Along the South Texas Coast**

Maddy Lee, Texas A&M University-Corpus Christi

*Spartina alterniflora* is a dominant resilient marsh plant along the US Gulf and Atlantic coasts. It is a facultative halophyte that can grow in saline environment but can tolerate salinity levels ranging from 8 – 33 ppt for long term persistence. How different *S. alterniflora* populations survive or adapt to their local environment is key to understanding their resilience. In this study, we assessed whether there are differences in the traits among populations along the South Texas bays that span a gradient of salinity. We took 20-25 plant samples from three different sites along the coastline of Texas. Plant height, stomatal conductance, and fluorescence from each plant were collected, along with other environmental variables. Preliminary results indicate that the salinity gradient along the South Texas coastline influence differences in phenotypic traits among *S. alterniflora* populations. It is important to understand how abiotic factors, particularly salinity, shape *S. alterniflora* potential for local adaptation through expression of phenotypic traits. These traits serve as an ecosystem health indicator that can aid in coastal protection as well as help the coastal restoration efforts of natural marshlands in South Texas that are vital to ecosystems.

### 22 **Can Shell Proteins of Eastern Oysters Serve as Indicators of Growth Conditions?**

Jianhong Xue, University of Texas Marine Science Institute

Eastern Oysters are an important species in Texas bays and estuaries and a key economic generator in Texas. Since 2019 oyster farming has been rapidly developing in Texas due to the decline of oyster populations along the coasts and the growing demand for high quality seafood. Understanding what environmental factors drive the oyster growth becomes very critical to support farm practice in Texas, such as farm site selection. In this study we attempt to evaluate whether shell protein can record the growth conditions or environmental factors using a “tree-ring” approach. To do so, we monitored four oyster farms along the Texas coast, representing a salinity gradient increasing from north to south, along with wild oysters across Mission-Aransas Estuary monthly throughout 2025. Environmental factors, such as salinity, total suspended particles, chlorophyll a and accessory pigments were measured. The shells proteins, as total hydrolyzable amino acids, are sampled sequentially in the hinge region using a micromill. Preliminary results show that salinity differed among the farms and precipitation temperately changed the salinity. The chlorophyll a levels at all sites peaked in the summer, but there was a seasonal shift in phytoplankton community: winter and spring dominated by diatoms and cryptophytes, summer and fall by cyanobacteria. This seasonal shift in food quality, as well as other factors, might have affected the growth of oysters. Protein analysis is on-going, and the results will be further connected to environmental factors, to evaluate the feasibility of using shell proteins as a diagnostic tool for oyster’s growth conditions.

### 23 **Improving Resilience for Oysters by Linking Brood Reefs and Sink Reefs: Preliminary Results From the TPWD/NRDA East Bay Oyster Reef Restoration Project**

William S. Rodney, Texas Parks & Wildlife Department

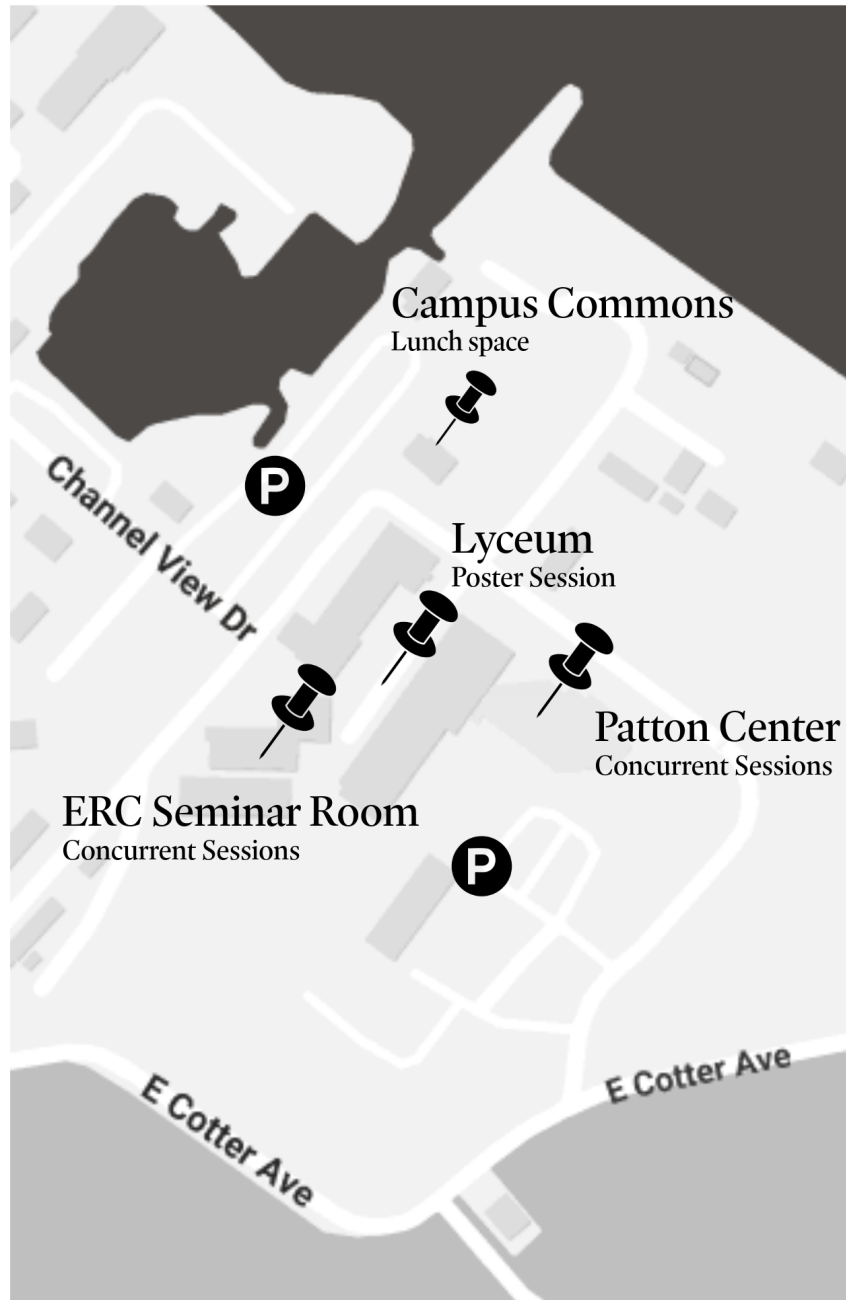
This project is a partnership between Texas Parks and Wildlife Department and the Natural Resources Damage Assessment (NRDA) Trustees. It is the Texas component of a larger project that spans the entire Northern Gulf Coast from Texas to Florida. It is funded by the Deepwater Horizon Oil Spill settlement through the Natural Resources Damage Assessment Trustees (NRDA). The project has both inter-tidal and sub-tidal components that are designed to function as broodstock reefs that will improve resilience of nearby commercially harvested reefs by supplying oyster larvae to the reefs via planktonic larval transport. The inter-tidal component will feature 1,377 reef mounds contained in 3 restoration areas totaling 33 acres. The 8 acre sub-tidal component will feature 112 reef mounds, 56 reef piles, and a 2 acre area reserved for recycled concrete culverts and materials approved by TPWD. Monitoring parameters will include Live, Large, Spat and Dead Oyster Density, along with Oyster Mortality, and Live and Dead Oyster Size Structure. Temperature, DO and Salinity data will data will also be collected using a YSI multimeter or similar unit. Appropriate natural reference sites will also be monitored. Pre-construction monitoring has been completed and these results will be presented.

### 24 **Advancing Shallow-Water Habitat Mapping: New Serpulid Reef Discoveries in the Baffin Bay Complex**

David Norris, Jr., Texas Parks & Wildlife Department - Coastal Fisheries

Serpulid reefs in the Baffin Bay complex represent a globally rare hardbottom habitat that supports recreationally and commercially important fauna and provides numerous ecosystem services. Despite their ecological importance, the most recent comprehensive mapping effort for this system dates back to the 2004 NOAA Benthic Habitat Atlas, leaving a substantial information gap regarding current reef distribution and condition. Moreover, previous mapping efforts have relied solely on satellite imagery to classify Baffin's benthic habitats. The Texas Parks and Wildlife Department's Habitat Assessment Team (HAT) is conducting high-resolution acoustic surveys to update submerged habitat inventories and evaluate the effectiveness of recreational-grade side scan sonars for mapping extremely shallow estuarine environments. Since 2024, HAT has completed surveys for five out of seven predetermined sites and generated imagery for over 997 acres of bay bottom. The resulting mosaics reveal highly detailed serpulid reef morphology and clearly partitioned sediment types, enabling precise delineation of reef boundaries. Preliminary interpretation indicates the presence of significantly more extensive serpulid reef structure than previously documented. These findings highlight the value of modern acoustic techniques for detecting fine-scale habitat features in turbid, shallow systems where satellite imagery alone is insufficient. Continued acoustic surveys, ground truthing, and integration with additional forthcoming satellite-derived classifications will support the development of updated habitat maps and inform long term conservation planning for Baffin Bay's sensitive estuarine ecosystems. A comparison of multiple remote sensing approaches utilized for this project will also inform future habitat mapping efforts along the Texas coast.

# CAMPUS MAP



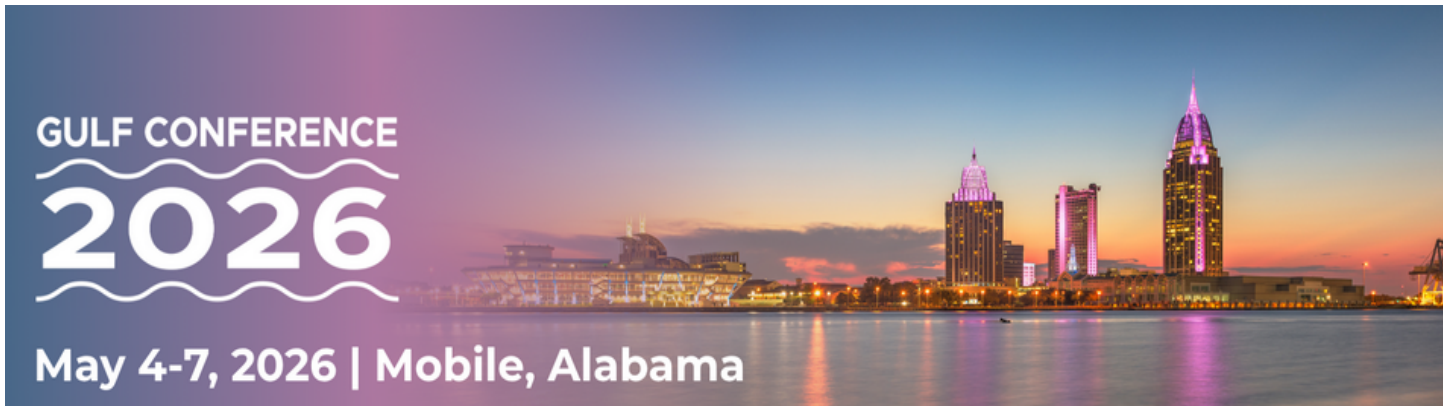
The University of Texas Marine Science Institute is dedicated to the three central functions of a major university (research, education, and outreach) as they apply to the Texas coastal zone and other marine environments. As an organized research unit of The University of Texas at Austin, the main goal of the Marine Science Institute is to improve our understanding of the marine environment through rigorous scientific investigations.

Mission-Aransas National Estuarine Research Reserve (Estuarine Research Center):  
750 Channel View Dr, Port Aransas, TX 78373

The Patton Center for Marine Science Education:  
855 E Cotter Ave, Port Aransas, TX 78373

# UPCOMING EVENTS & MEETINGS

Events and meetings are hyperlinked to their respective websites.



**GULF CONFERENCE**  
**2026**

May 4-7, 2026 | Mobile, Alabama



**SOCIETY OF WETLAND SCIENTISTS**

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**BOGS TO BAYOUS**  
Wetland Science, Policy, and People

Annual Meeting  
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**156TH ANNUAL MEETING**  
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AMERICAN FISHERIES SOCIETY  
COLUMBUS 2026

AUGUST 30 - SEPTEMBER 3, 2026



**WATER FOR TEXAS**  
2027 CONFERENCE

HOSTED BY THE TEXAS WATER DEVELOPMENT BOARD

**JANUARY 25-27, 2027**  
AUSTIN, TEXAS

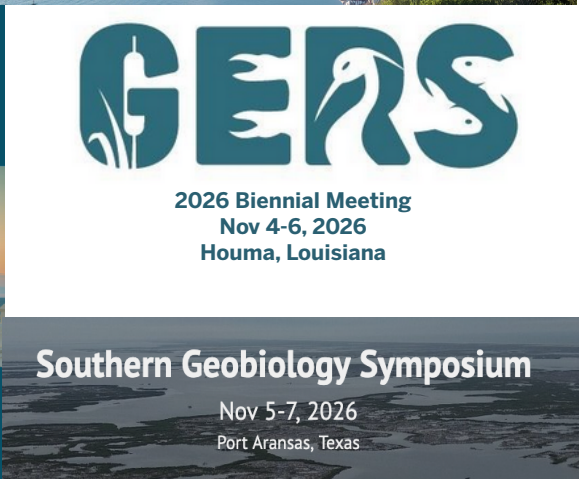


*Save the Date*  
**Texas Bays & Estuaries Meeting**  
April 21-22, 2027



**SAVE THE DATE!**  
**CERF 2027**

**29TH BIENNIAL CONFERENCE**  
**SAN JUAN, PUERTO RICO | 7-11 NOVEMBER**



**GERS**

2026 Biennial Meeting  
Nov 4-6, 2026  
Houma, Louisiana

**Southern Geobiology Symposium**  
Nov 5-7, 2026  
Port Aransas, Texas

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# UPCOMING EVENTS & MEETINGS



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FOR YOUTH AGES 10+, ENTERING 5TH- 11TH GRADE

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2026

- BOAT TRIPS
- CAREER EXPLORATION
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WEEK 1: JUNE 1-5, \$150
WEEK 2: JUNE 8-12, \$150
WEEK 3: JUNE 15-18, \$130
WEEK 4: JUNE 22-26, \$150



## POST-EVENT SURVEY

Thank you for attending the Texas Bays and Estuaries Meeting 2026. We welcome your input and invite you to complete the post-event survey by scanning the QR code or clicking the image below after all meeting activities have concluded. Your feedback is greatly appreciated and will help guide future planning efforts.



*We look forward to seeing you at the next TBEM, scheduled for April 21 and 22, 2027.*