GULF CONFERENCE 2026

May 4–7, 2026 | Mobile, AL

Conference Abstracts

Tuesday May 5, 2026

Title	Speakers	Description	Location	Starts	Ends
Introductions: Relationships and underlying mechanisms between environmental trends and variability and fisheries populations	John Lehrter	Intorduction to the session and KeynoteSpeakers:Shenghua Wu, Associate Professor, Department of Civil, Coastal, and Environmental Engineering, University of South AlabamaJacquelyn Grace, Assistant Professor, Dept. of Ecology & Conservation Biology, Texas A&M UnivsityTerri Maness, Environmental Science Program Coordinator, School of Biological Sciences, Louisiana Tech University Micro and nanoplastics (collectively referred to as microplastics) are an emerging global challenge that threatens the health, resilience, and sustainability of coastal ecosystems. Nowhere is this issue more pressing than in the Gulf Coast, a region defined by its rich biodiversity, vital fisheries, dense coastal populations, and the nation's highest concentration of plastic manufacturing facilities. Despite growing awareness, our understanding of the scope, severity, and long-term impacts of microplastic pollution remains limited due to its inherently transdisciplinary nature. This session provides a platform for dialogue and collaboration among ecologists, engineers, chemists, physicists, oceanographers, social scientists, environmental educators, community collaborators, and policymakers. We invite presentations that examine the sources, concentrations, and ecological or human health effects of microplastics across marine, estuarine, and terrestrial systems in the Gulf region. Topics may include innovative technologies for mitigation and removal, such as cost-effective treatment systems, recycling and repurposing techniques, and the use of artificial intelligence for real-time monitoring and hotspot identification. Emphasizing environmental stewardship, this session also encourages contributions that explore the integration of science and management to inform decision-making and community action. By bridging disciplines and sectors, including academia, industry, and government, we aim to advance understanding of the Gulf's unique vulnerabilities and accelerate the development of practical, scalable solutions for reducing microplastic pollution. Through shared knowledge and collective effort, this symposium seeks to chart a path toward a cleaner, more resilient, and sustainable Gulf Coast	201B	10:30 AM	10:45 AM
Meaningful Watershed Educational Experiences Implementation and Integration	Marlies Tumolo	MWEE Introduction: Learn about the fundamentals of Meaningful Watershed Educational Experiences (or MWEEs) from NOAA representatives. This student-centered approach to evidence-driven learning incorporates local phenomena and real-world issues. When individuals participate in MWEEs, they investigate, solve problems, and make connections. In addition to reviewing some of the fundamentals, the presentation will also include ways to get more information (including self-paced training) on MWEE implementation. The subsequent presentations in this session will all demonstrate different ways that MWEEs have been implemented across the Gulf states.	203B	10:30 AM	10:45 AM

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Title	Speakers	Description	Location	Starts	Ends
Informed Decision-Making for Coastal Communities with NOAA's Modernized Sea Level Trends and Extremes	Connor Lewis	NOAA's National Ocean Service (NOS) maintains an archive of water levels at each of its tide gauges. Transforming raw data into actionable knowledge for stakeholders hinges on data refinement and the systematic innovation of operational products. Refined data can ground-truth sea level changes and provide guidance for decision-making on navigation, marine boundaries, coastal and habitat restoration, and more. To build or enhance NOS products, there is a newly adopted emphasis on stakeholder engagement to collect, verify, and integrate technical requirements from end-users. Recent feedback led to the integration of two standalone NOAA products into a single platform, Sea Level Trends and Extremes. In addition to streamlining and modernizing the user interface, the product will provide local and regional statistics, while also visualizing data via an interactive geospatial map. Sea Level Trends and Extremes acknowledges the influence of vertical land motion on local sea level change through map layers and regional explainers. The newly integrated site will provide NOAA's sea level trend computations, annual exceedance probabilities, and other metrics including variability. Supporting text contains updated terminology and phrasing that effectively describes these complex statistics, which can be adopted for various outreach campaigns. For technical users, the site also provides access to Github notebooks, allowing users to customize sea level trend and extreme water level plots based on parameters such as vertical land motion. This oral presentation will highlight NOAA's ability to synthesize and aggregate its tide gauge data and produce a user-friendly product that assists in community-level coastal resiliency planning. Potential users will learn about updates to authoritative sea level information and strategies for informed decision-making based on historical observations.	202A	10:30 AM	10:45 AM
Tracking the Past, Mapping the Future: Oyster Habitat Trends in the Northern Gulf Coast States	Avery Mottet	This presentation will highlight a regional collaboration funded by the Gulf of America Alliance (GOAA) to evaluate the status and trends of oyster habitat in the Northern Gulf States of Mississippi, Alabama, and Florida. The study, conducted by Freese and Nichols, Inc., builds upon previous GOAA-led efforts in Texas and Louisiana to create a comprehensive, Gulf-wide understanding of oyster habitat dynamics and management needs. The study focuses on compiling, analyzing, and interpreting existing oyster habitat data to establish historical baselines, assess long-term changes, and identify spatial and temporal trends in oyster extent and condition from approximately 1985 to the present. Through collaboration with state resource agencies and local stakeholders, the team is cataloging publicly available datasets and historical surveys—ranging from 19th-century Bureau of Fisheries reports to modern ArcGIS-based monitoring systems—to evaluate habitat distribution, restoration outcomes, and monitoring consistency across jurisdictions. The resulting analysis will characterize regional and local threats to oyster ecosystems. Spatial data products generated through this work will be integrated into GOAA's Oyster Community of Practice ArcGIS Online platform, supporting shared access and visualization for future management and restoration planning.	204A	10:30 AM	10:45 AM

Title	Speakers	Description	Location	Starts	Ends
Geospatial Dependencies between Environmental Quality, Infrastructure and Associated Health Outcomes	Hanadi S. Rifai	Health outcomes are shaped by complex dependencies among environmental exposures and built environment characteristics, in addition to socioeconomic drivers. These influencing factors vary spatially and temporally thereby adding elements of uncertainty and difficulty in elucidating their relative impacts. This study explores geospatial modeling tools towards a better understanding of multiple specific health conditions and key environmental and infrastructure factors that serve as explanatory variables when combined with sociodemographics of individuals with specific health conditions. Harris County in Texas is modeled geospatially as a testbed demonstration for seven health outcomes that include high blood pressure, asthma, COPD, stroke, cancer, diabetes, and mental health. Studied influencing factors included air pollution ($PM_{2.5}$, ozone), housing age, impervious surface, poverty, unemployment, and health insurance coverage. Ordinary Least Squares (OLS), Geographically Weighted Regression (GWR), and Multiscale Geographically Weighted Regression (MGWR) models were developed. Results indicated that PM2.5 exposure significantly correlated with increased cardiovascular and respiratory health outcomes, particularly at elevated concentrations. In contrast, ozone demonstrated a plateauing effect, increasing the health risks but with a diminishing impact at higher concentrations. The correlations between social disadvantage and air quality were modest, suggesting homogenous distributions of PM2.5, and NO2 across socioeconomically variable areas, whereas ozone exposure slightly increased with higher social disadvantage. The results pointed to the criticality of understanding geospatial heterogeneities in chronic disease burdens and emphasized the importance of using spatially adaptive models to better understand drivers of health.	201C	10:30 AM	10:45 AM
Building Resilient Seagrass Communities in Florida: Advancing Technology and Strategy for a 10-Year Restoration Vision	Rebecca Prado	Florida's iconic seagrass beds—vital for biodiversity, water quality, and coastal resilience—are under increasing threat. In response, a comprehensive catalog of active restoration efforts has been compiled to inform the development of the 10-Year Resilient Florida Seagrass Restoration Plan. This initiative, led collaboratively by Mote Marine Laboratory, the Florida Aquatic Preserve Program, and the University of Florida, with support from Moffatt & Nichol, represents a statewide push to scale restoration through innovation. With funding support from the Florida Department of Environmental Protection under the Seagrass Restoration Technology Development Initiative, this presentation will highlight current restoration and management activities, share lessons learned from practitioners, and unveil the strategic framework to guide implementation. A key milestone—the launch of Florida's first geospatial database of seagrass restoration projects—will be presented as a tool to accelerate use of genetic resilience in restoration, practitioner coordination, technique/data transparency, and impact across agencies and ecosystems.	203A	10:30 AM	10:45 AM

Title	Speakers	Description	Location	Starts	Ends
From Prediction to Mitigation: Hybrid AI–Numerical Modeling for Next-Generation Flood Resilience in Texas and Louisiana	Z. George Xue	Coastal communities in Texas and Louisiana face accelerating compound flood risks driven by sea-level rise, intensifying rainfall, subsidence, and rapid urbanization. While physics-based hydrodynamic models provide essential mechanistic understanding, their computational cost limits real-time forecasting, ensemble uncertainty analysis, and community-scale scenario testing. To address this gap, we developed a hybrid AI–numerical modeling framework that fuses high-resolution COAWST/ROMS simulations with advanced machine-learning architectures following the P2M (Prediction-to-Map) methodology. Applications across the Louisiana and Texas coasts demonstrate that this approach preserves the fidelity of full hydrodynamic models while delivering four to five orders of magnitude gains in computational efficiency, enabling near-instantaneous flood prediction, probabilistic hazard mapping, and rapid evaluation of thousands of storm, rainfall, and land-use scenarios. The AI surrogates remain tightly anchored to physical model outputs, ensuring interpretability, robustness, and transferability across coastal settings. Building on this foundation, we present a vision for a next-generation AI-enhanced flood mitigation engine—a scalable digital-twin platform integrating physics-based modeling, real-time data assimilation, AI ensemble forecasting, and critical-infrastructure vulnerability analytics to support emergency managers and planners with rapid scenario exploration and optimized mitigation strategies. This framework aligns directly with the Community Co-Financed Flood & Energy Resilience (CCOFFER) initiative, which leverages digital-twin capabilities, AI-based forecasting, and land-value-capture mechanisms to co-design equitable, financeable resilience pathways for Gulf Coast communities. Together, the hybrid AI approach and the CCOFFER vision outline a transformative path from prediction to proactive, community-driven flood mitigation.	204B	10:30 AM	11:00 AM
GoMAMN: Research and monitoring prioritization for Gulf birds through co-production	Evan M. Adams	Following the Deepwater Horizon oil spill, assessing the population-level effects on approximately 93 affected bird species proved challenging. Limited baseline data on population size, density, and distribution created significant uncertainty about the Gulf's ecological condition. Contributing factors included variable study designs, small spatial and temporal scales, unclear objectives, and inconsistent use of standardized monitoring protocols. To address these issues, the Gulf Avian Monitoring Network (GoMAMN) was established in 2014 to coordinate bird monitoring efforts and improve the use of data for conservation and restoration decisions. GoMAMN is a self-organized collaboration of federal, state, academic, and NGO partners, collectively, the Community of Practice. Through facilitated workshops and the principles of co-production and structured decision-making, GoMAMN created a platform for coordination, communication, information synthesis, and consensus building. Using decision theory, our network identified core values, data needs, and evaluation criteria to guide future monitoring priorities. By developing and assessing potential monitoring programs through a prioritization framework, GoMAMN identified the most valuable and cost-effective approaches to maximize the usefulness of bird monitoring data for restoration and habitat conservation. Seven taxa-based Working Groups (landbirds, marshbirds, raptors, seabirds, shorebirds, wading birds, and waterfowl) were initially established, along with an Avian Health Working Group and, later, a Renewable Energy Working Group. These collaborative efforts have produced numerous research and monitoring projects, several of which are featured at this meeting. We will highlight how these planning efforts have led to successful programs and continue to strengthen co-produced science that advances bird conservation across the northern Gulf region.	201A	10:30 AM	10:45 AM

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Title	Speakers	Description	Location	Starts	Ends
Innovations in Surveillance and Control of Vector-Borne Diseases in the Southern U.S.	Sarah Gunter	Vector-borne diseases have risen substantially in incidence across the United States over the past two decades, driven largely by expanding vector ranges, shifting climate conditions, urbanization, and socioeconomic vulnerabilities. Diseases such as dengue and spotted fever group Rickettsioses are now emerging or re-emerging in regions previously considered low risk. These trends are projected to intensify as climate change continues to alter habitat suitability, seasonality, and transmission dynamics. The public health infrastructure responsible for vector surveillance and control remains chronically under-resourced, fragmented, and reliant on labor-intensive methods that cannot keep pace with rapidly changing risk landscapes. There is a critical need for scalable, proactive, and data-driven tools that can detect, predict, and interrupt transmission before outbreaks occur. This presentation will highlight our work to develop innovative technologies to strengthen vector-borne disease surveillance and control. Specifically, we will discuss the integration of artificial intelligence and machine learning to optimize vector surveillance, enhance early-warning systems, and inform targeted control strategies.	201C	10:45 AM	11:00 AM
CANCELED TALK Multi-Stressor Drivers of Fish Species Distributions on the Southwest Florida Shelf	Brittany Troast	The Southwest Florida shelf encompasses diverse and essential marine ecosystems that provide a variety of socioecological services and support commercial and recreational fisheries. Compounding global and local stressors have led to habitat degradation, declining water quality, and episodic extreme events, with cascading ecosystem impacts. The Florida Regional Ecosystems Stressors Collaborative Assessment (FRESCA) is a collective effort to evaluate five key stressors affecting the region. This multidisciplinary project takes a comprehensive approach to monitoring, predicting, and managing South Florida waters through observation, experimentation, and modeling. Evaluating the combined effects of fluctuations in key stressors on target species is necessary for informed decision-making with a long-term outlook. To support major ongoing restoration efforts in the area, we explore the relationships of these stressors to the abundance and distribution of the fish community. These linkages are used to forecast species' shifts under alternative climate scenarios and restoration strategies for proactive management. We apply spatiotemporal species distribution modeling to quantify potential shifts in abundance and distribution under key stressors, including ocean acidification, hypoxia, ocean warming, harmful algal blooms, and eutrophication. Regional ocean modeling provides physical and biogeochemical parameters for historical reconstructions and future projections and serves as the primary environmental inputs for species distribution modeling. Additionally, observational and experimental data from the broader collaboration are integrated to provide context and complement modeled estimates. Collectively, this multi-stressor, interdisciplinary approach provides a holistic view of historical fish species distribution and potential responses to environmental change in South Florida waters.	201B	10:45 AM	11:00 AM

Title	Speakers	Description	Location	Starts	Ends
CCOFFER: The Community Co-Financed Flood and Energy Resilience project	James Spencer	Flooding and energy instability increasingly threaten the health, safety, and financial security of residents, especially low- and moderate-income (LMI) homeowners, whose primary source of wealth is tied to property. Many such communities have begun planning, but across the Gulf Coast region, the cost of resilience-building infrastructure (RBI) far exceeds what local governments or LMI communities can afford. At the same time, federal funding remains limited and unpredictable. The result: chronic underinvestment, accelerating property value decline, and growing risk of affordability. In Lake Charles, LA, for example, homes exposed to high flood levels lost more than 10% of their market value after Hurricane Laura, compounding already steep increases in insurance premiums and financial stress. Simultaneously, severe storms and a fragile power grid also leave vulnerable residents without power and communications. Without new ways to finance RBI infrastructure, LMI families will continue to bear the most significant costs of environmental change, and every year of delay only compounds these economic losses. The Community Co-Financed Flood and Energy Resilience (CCOFFER) initiative offers a new, self-sustaining model for environmental adaptation, one that empowers communities to finance their own resilience and preserve their own future on the coast. It leverages Land Value Finance (LVF) tools (sometimes known as Land Value Capture) to transform how Gulf Coast communities finance and build RBIs. CCOFFER's use of LVF unites innovative finance tools, advanced data analysis, and community co-design to unlock the development of flood protection and clean energy microgrids. By quantifying the future value that resilience investments create (higher property values, lower energy costs, and reduced disaster losses), CCOFFER will align the financial interests of residents, developers, insurers, and investors. In delivering this innovative finance tool, CCOFFER combines authentic community engagement with cutting-edge yet user-friendly scientific models to drive financing support for flood and energy resilience investments. Once built, these investments will grow land value which can be used to accelerate future investments. This approach enables upfront private and community capital to be packaged into co-financed RBI projects, significantly reducing dependence on public subsidies. In sum, CCOFFER is a process for financing critical resilience infrastructure projects that benefit everyone, but that no one can afford alone. It aligns residents, developers, and government interests, adds cutting-edge science and engineering, and results in implemented projects that improve community resilience.	202A	10:45 AM	11:00 AM
Status of a Habitat Suitability Model for Florida Bay	Don Blancher	The Seagrass Restoration Technology Development Initiative (403.9334 Florida Statutes) provides resources to develop and implement tools and technologies to support the 10-year Florida Seagrass Restoration Plan. One of the technologies to be implemented is a Habitat Suitability Model that can be used to track seagrass habitat trends across the State which can be used to target specific initiatives that enhance seagrass restoration. This habitat suitability model (HSM) will pilot the tier-one phase of resilient seagrass site selection. The pilot project, which targets Florida Bay in south Florida and the Keys, assesses the efficacy of the model in identifying locations where data indicate suitable conditions for seagrass and expand the traditional considerations for the genetically resilient ranges identified by this initiative. This assessment will be the foundation of the proposed three-tiered process for selecting project locations for resilient seagrass restoration in other locations. The pilot model combines multiple available GIS layers (salinity, water clarity, temperature etc.) and provides ongoing opportunities for implementing regional seagrass restoration including planting and water quality restoration efforts. Current status of the model and future directions for regional expansion will be presented.	203A	10:45 AM	11:00 AM

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Title	Speakers	Description	Location	Starts	Ends
Coastal Connections: Empowering Interdisciplinary Coastal Resilience in Mississippi Classrooms	Evelyn McQueen	This project, Empowering Interdisciplinary Coastal Resilience in Mississippi Classrooms, is part of the larger Coastal Connections Program, which is focused on the local impacts of a changing environment on the watershed. The Coastal Connections Program aims to bring together the coastal environment and the community through meaningful, hands-on experiences that raise environmental literacy, adaptability, and stewardship. This project is aligned to Mississippi state standards for high school classrooms and is administered along the Gulf Coast, supporting teachers from a variety of subjects—including, but not limited to, Art, Social Studies, Math, History, and English. It helps educators teach about how weather events affect our local communities and environment, and how we can adapt to or reduce those impacts. As part of the project, teachers lead their students through a Meaningful Watershed Educational Experience (MWEE). Students complete a Coastal Resilience Audit to explore how the changing environment is affecting their school. Then, they create a plan to take action and make a positive impact.	203B	10:45 AM	11:00 AM
Considerations when using oyster maps to guide management decisions	Casey Craig	Oyster reefs occupy subtidal and intertidal zones in Florida and are mapped using a variety of methods to inform resource management. Regardless of the method used for mapping, each has its limitations resulting in the underrepresentation of certain types of reefs, which in turn can influence trend analyses used to make management decisions. For example, oyster reefs under bridges or vegetative canopy and peripheral oysters growing on vertical structures (e.g., mangrove roots, seawalls) are not visible in maps made using aerial imagery. Additionally, reefs in the shallow subtidal zone are often too shallow to be captured using sonar but too deep to be distinguishable in aerial imagery. As a result, these reefs are often excluded from maps; however, they still provide ecosystem services, contribute to the genetic population, and can be indicators of potential site suitability for restoration. Here we present four primary factors to consider when using oyster maps to inform decision making – the mapping method, the mapper's definition of an oyster reef, the accuracy of delineation boundaries, and recognition of unmapped reefs. These factors heavily influence the resulting map, impacting both the comparability across different mapping techniques and the conclusions drawn from trend analyses. If these four factors can be considered in co-production of mapping efforts, the existing mapping techniques can be adapted to capture more accurate oyster distribution data, which will lead to more informed resource management.	204A	10:45 AM	11:00 AM

Title	Speakers	Description	Location	Starts	Ends
Optimizing coastal bird conservation and management on the Gulf Coast through co-produced research and structured decision making (SDM)	Jennifer Fuller	Conservation practitioners face the urgent and complex challenge of addressing global biodiversity threats within social-ecological systems with multiple jurisdictions, numerous interest groups, and changing environmental conditions. More efficient and effective conservation requires bridging the research to implementation gap between scientists and managers and integrating diverse perspectives that better represent the variety of considerations impacting management outcomes. Avian conservation programs along the U.S. Gulf Coast exemplify these challenges since declining coastal bird populations face diverse threats and uncertainty surrounding efficacy of large-scale management strategies due to their wide breeding and migratory ranges. In continuation of the Gulf Avian Monitoring Network's (GoMAMN) co-produced efforts, we assembled a multi-state and -organizational team of scientists and resource managers to apply co-production principles and Structured Decision Making (SDM) to develop high-priority research questions most likely to improve effective avian conservation and management. The integration of SDM's five-step framework ensured key principles of co-production were met, while co-production enhanced SDM outcomes by incorporating diverse perspectives and knowledge bases. As part of SDM, we also applied Constructed Value of Information (CVoI) which allowed participants to collectively determine final high priority research questions in the face of complexity and uncertainty. The resulting research questions, currently being pursued under NOAA RESTORE funding, included the following: 1) what is the relative efficacy of various stewardship techniques and intensities implemented during different phases of the breeding season and across a range of socio-ecological conditions? and 2) are community-wide education and outreach campaigns effective supplements to on-the-ground stewardship to alter human behaviors? Our study demonstrates how co-production through SDM and CVoI offer a broadly applicable approach for navigating ecological complexity and bridging the research–implementation gap in avian conservation.	201A	10:45 AM	11:00 AM
Using multiple dimensions of ecosystem functioning to guide oyster reef management in Texas	Simon Brandl	Oyster reefs in the Gulf of Mexico are an invaluable natural ecosystem and resource for coastal communities. Yet, they are threatened by multiple stressors and in Texas, continuing harvest of oyster reefs through dredging imposes a strong impact on some of the last remaining healthy oyster reefs in the Gulf. This produces a contentious landscape for management, as benefits of maintaining the oyster reef fishery have to be weighed against potential degradation of oyster reefs and their services. The NOAA RESTORE funded DECORATE project (Developing an Ecosystem-based Conservation framework Across Texas Estuaries) seeks to provide the Texas Parks & Wildlife Department (TPWD) with guidance for oyster reef management by examining the drivers of oyster reef functioning through space and time. Specifically, by applying a wide range of interdisciplinary techniques —from acoustic telemetry and passive acoustic monitoring to track fish habitat use to eDNA, bioboxes, biogeochemistry, and toxicology— we aim to develop a management tool that permits the simulation of oyster reef multi-functionality under different management regimes. In this talk, I will provide a first glimpse of the insights gained from fieldwork in five major bay systems in Texas, highlighting trends, challenges, and future opportunities.	204A	11:00 AM	11:15 AM

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Title	Speakers	Description	Location	Starts	Ends
Investigating Dynamic Behavior of Compound Flood Hazard and Exposure During Tropical Cyclones.	Md Mamunur Rashid	When flooding is driven by multiple flood-generating drivers, such as storm surge, winds, rainfall, and inland discharge, it is referred to as compound flooding (CF), which is more widespread, extending from the coast to far inland and devastating than flooding driven by a single driver. This study hindcasts and compares the flooding from Hurricane Harvey (2017) and Hurricane Ike (2008) across Galveston-Houston, Texas, to investigate how pluvial, fluvial, coastal, and compound processes contribute to the hazards and property-level exposures during these events. We employ a reduced-physics hydrodynamic model (Super-Gast Inundation of CoastS, SFINCS) to hindcast flooding extent and inundation depth, accounting for coastal, pluvial, and fluvial flooding processes. The study investigates approximately 1.6 million buildings across the region. The model skillfully reproduces observations from NOAA tide gauges, USGS stream gauges, and FEMA high-water mark stations. The investigation reveals that the extent of flooding is dynamic and varies from hurricane to hurricane. The contributions of different flooding processes (coastal, pluvial, fluvial, and compound) to the flood extent vary significantly across the hurricane periods. We found that the property-level exposures differ significantly between Hurricane Harvey and Hurricane Ike. Though compound flooding from Hurricane Harvey was widespread compared to that from Hurricane Ike, more buildings were inundated during Hurricane Ike. The study underscores the dynamic behavior of tropical cyclone (TC)-driven compound flood (CF) hazard and exposure across hurricanes and suggests investigating multiple TC-driven CFs to obtain robust CF hazard and exposure estimates.	202A	11:00 AM	11:15 AM
Mapping Local Health Burdens of Environmental Exposures in Florida	Emily Powell	Exposure to environmental hazards can increase the risk of emergency department (ED) visits for various diseases. This project estimated individual and interactive effects of exposure to heat and air pollution on localized human health outcomes in Florida, as well as population disparities in these effects. We applied time-series generalized additive models to estimate susceptibility of heat and ozone (O3) on ED visits for all causes using daily average heat index (HI) and O3 concentration from 2000 to 2016. We quantified Heat-Response Turning Points (HRTPs) based on exposure-response relationships at the state, county, and zip code scales to understand adaptation behavior. A 1°C (1.8°F) increase in the HI was significantly associated with a 0.65% (CI: 0.61%-0.68%) increase in ED visits for all causes. The statewide exposure-response relationship between HI and ED visits was characterized by an inverted “U” curve, indicating a significant HRTP at 32.1°C (89.8°F), suggesting possible adaptations with higher HI values. Subgroup analysis by birth sex and age showed that susceptibility to heat was comparable between sexes but higher among younger people under the age of 18. Spatial analysis suggests that regions with higher susceptibility to heat, which were clustered in central, southwest and Big Bend areas of Florida, exhibited weaker adaptations. Results indicate that O3 was significantly and approximately linearly related to ED visits for all causes, with a 10 ppb increase in O3 associated with a 1.46% (CI: 1.29%-1.63%) increased risk in ED visits. The effects of O3 were significantly stronger among younger groups under 18. The interactive effects between heat and O3 on ED visits were statistically significant, with the strongest association when O3 exceeded 50 ppb and the HI was over 30°C (86°F). Our results highlight differences in vulnerability, both spatially and across subgroups, that can inform targeted interventions to reduce adverse public health outcomes.	201C	11:00 AM	11:15 AM

Title	Speakers	Description	Location	Starts	Ends
Using Co-Production to Develop Community-Based Social Marketing Campaigns: A U.S. Gulf Coast Case Study	Jordan Mouton	Human disturbance to beach-nesting birds presents complex challenges to land managers on the U.S. Gulf Coast, which traditional stewardship strategies may be unable to adequately address on their own. Community-Based Social Marketing (CBSM) is a 5-step behavior-change framework that can increase the efficacy of traditional stewardship practices using tailored social science and marketing methods. This iterative process involves 1) selecting target behaviors for behavior-change campaigns, 2) determining constraints, benefits, and norms surrounding target behaviors, 3) designing and 4) implementing campaigns, and 5) evaluating campaign effectiveness. CBSM lends itself well to co-production, a process wherein researchers and practitioners work together throughout research and implementation procedures, due to CBSM having research and implementation components integrated into a single process. In our work, Virginia Tech's Dayer Human Dimensions Lab served as social science researchers, while shorebird biologists from National Audubon Society and its affiliates acted as implementers in a CBSM project to reduce human disturbance on coastal beaches in Alabama, Mississippi, and Louisiana. Our team worked together to define target disturbance behaviors and campaign sites using initial human behavior and bird monitoring data. The Dayer Lab then conducted interviews and surveys of beach recreationists, incorporating feedback on design and interpretation from implementers, to establish the human behavioral context of campaigns. Implementers were then supported by Dayer Lab researchers in the design and integration of behavior change strategies into tailored CBSM campaigns, followed by social and ecological monitoring and evaluation campaign efficacy as campaigns were implemented. The work presented demonstrates how a co-production process can be leveraged to produce conservation-focused CBSM campaigns.	201A	11:00 AM	11:15 AM
Genetic diversity of Halodule wrightii, the shoal grass, across Florida's Gulf Coast	Dominique Gallery	Seagrasses are declining at an alarming rate in Florida, prompting increased restoration efforts throughout the state. Literature on other organisms highlights the importance of selecting restoration materials with natural resiliency and resistance to stressors, which may enhance overall success. Currently, many restoration managers, including those in the Florida Aquatic Preserves (AP), use Halodule wrightii as restoration material due to its natural abundance and importance to the marine meadow ecosystem. While some genetic research has been conducted using microsatellite markers on H. wrightii, there are no studies along Florida's Gulf Coast employing 2b-RAD sequencing, which can provide information on genetic diversity and connectivity, as well as historical reconstructions of population divergence. For this study, we collected samples that were genotyped using microsatellite markers and combined them with novel samples from several locations along Florida's Gulf Coast to determine the current genetic diversity, connectivity, and historical population divergences across geographic regions. This data has the potential to assist conservation efforts in Florida's declining seagrass populations.	203A	11:00 AM	11:15 AM

Title	Speakers	Description	Location	Starts	Ends
Developing Island STYLE-Systemic Training for Youth Leadership in the Environment	Amy Neblett	Island STYLE is a collaborative effort with Artist Boat to design, author, implement, deliver, and evaluate the NOAA BWET MWEE systemic model. Partners include Galveston Independent School District teachers and students; five regional science offices and their experts from NOAA (National Fisheries Galveston Laboratory, Office of Habitat Restoration, Flower Garden Banks National Marine Sanctuary, Office of Response and Restoration Marine Debris Program); area non-profit science experts from the Moody Gardens Aquarium, Houston Audubon and the Texas Marine Mammal Stranding Network; and the University of Houston Clear Lake Professor of Science Education and Evaluation. "Island STYLE" is designed to create systemic change in the way students view themselves as scientists, creators, and problem solvers through the lens of exploring Galveston Island, Galveston Bay, and the Gulf of Mexico with their teachers and experts, in and out of the classroom, and through their leadership in the environment creating actions based on student-led questions and concerns. Island STYLE included teacher professional development, embedded lesson plans across disciplines, Artist Boat led Eco-Art and Blue Carbon Workshops and Eco-Art Kayak Adventures, and student driven field adventures and environmental action projects. This project has a special emphasis on climate education, Gulf of Mexico fisheries, and education and engagement aligned with GOAA and NOAA priorities for BWET MWEE's. This project resulted in cross curricular integration of curriculum embedded throughout the middle school experience. The island youth along the Gulf are uniquely poised to be the future leaders and decision makers in their coastal communities and in our nation facing the most dynamic changing ocean, fisheries, and climate systems in human history. The Gulf and our nation will need these leaders and we need to grow them. Data across four years of implementation will be shared.	203B	11:00 AM	11:15 AM
Fisheries on the Move	Debra Murie	A multitude of studies globally have now documented shifts in the distribution of marine fishes and fisheries in relation to changing ocean conditions. These shifts may impact fisheries productivity by altering the distribution, growth, and sexual maturity of fish, while also changing species targeted by the fisheries. These changes can present opportunities as well as challenges to fisheries management. The proposed research will use data from long-term monitoring programs to model historical, contemporary, and future trends in the targeting, distribution, growth, and sexual maturity of select fish and fisheries along the extensive latitudinal gradient of Florida's west coast; contemporary distributions of fisheries species will also be monitored using sentinel sites along the coastal gradient. A suite of environmental variables related to changing ocean conditions will be considered as forcing factors (e.g., temperature, dissolved oxygen, salinity), along with other potentially important variables, such as changes in habitat and prey availability. We will also solicit fishers' knowledge of changes over time to understand and integrate their experiences. Co-production activities involving natural resource managers and local knowledge of fishers will be used to identify priority species for modeling. Expected findings include northward shifts in the centers of distribution of many fish species, and potentially offshore to deeper, cooler water, along with changes in species targeted through time. Shifting distributions present a unique challenge to the expanding application of regional approaches to fisheries management, as would changes in size at sexual maturity that are reflected in minimum length limit regulations. This research, in tandem with co-production involving fishers, natural resource managers, and fisheries agencies, will ultimately lead to adaptive, future management of recreational and commercial fisheries important to coastal fishing communities.	201B	11:00 AM	11:15 AM

Title	Speakers	Description	Location	Starts	Ends
An Explainable Deep Learning Framework for High-resolution Climate Impact Assessment of Coastal River Discharge	Di Tian	Coastal river discharge plays a critical role in regulating coastal water quality, ecosystem health, and community resilience. However, understanding how terrestrial hydroclimate influences past and future discharge remains limited due to coarse and biased climate inputs, structural limitations of hydrologic models, and the black-box nature of many deep learning approaches. Here we present an explainable deep learning framework (X-CNN-LSTM) that integrates convolutional neural networks (CNNs) and long short-term memory (LSTM) networks to capture spatial and temporal controls on discharge, incorporates trend-preserving, super-resolution deep learning to downscale climate simulations, and enables saliency-based interpretability. The X-CNN-LSTM achieves Kling–Gupta Efficiencies (KGE) of 0.825, 0.786, and 0.714 for the Alabama, Tombigbee, and ACF Rivers, respectively, outperforming standalone deep learning models, process-based models, and flood reanalysis data. Saliency-based analysis identifies runoff and soil moisture as dominant predictors and highlights key regions driving discharge variability. Additionally, the use of trend-preserving, multivariate super-resolution deep learning to downscale climate inputs significantly improves discharge simulation accuracy during the historical period. To assess future climate impacts, we drive X-CNN-LSTM with super-resolution deep learning downscaled CMIP6 climate projections under SSP2-4.5 and SSP5-8.5 scenarios. Results show consistent decreases in low flow extremes and increases in interannual variability, signaling heightened hydrologic risks. These trends are robust across multiple downscaled CMIP6 climate and Earth system models. Overall, this explainable deep learning framework offers a notable advancement in high-resolution climate impact assessment of coastal river discharge.	204B	11:00 AM	11:15 AM
From Collapse to Recovery: Monitoring Eastern Oyster Reef Replenishment in Mississippi	Katherine Glover	In 2019, the Bonnet Carre spillway had the longest opening since its construction. This historical flooding event led to a decrease in salinity within the Mississippi Sound that persisted until mid-July, a period typically showing high levels of oyster spawning. Mississippi oyster reefs lost approximately 96.9% of oysters in the western MS Sound and about 63.8% in the eastern MS Sound. While the loss of a major commercial fishery is cause for worry, the long-term effects must be considered. Oyster reefs provide habitat for many marine species and coastal protection from storm surge and erosion. The structure and stability of these reefs combat natural degradation with the recruitment of new individuals from annual spawning. Reef assessments performed in the subsequent years showed minimal recruitment of oyster spat to reefs which triggered the development of a spat settlement and recruitment monitoring program. The Mississippi Department of Marine Resources (MDMR) identified historically productive oyster reef sites within state waters to investigate spatial and temporal patterns of Eastern oyster (Crassostrea virginica) recruitment. From 2022 to 2025, preliminary monitoring data indicate a marked increase in spat settlement across all study locations. Through this project, we aim to determine localized oyster settlement trends and understand the driving factors of survival of oyster reefs when faced with natural and man-made disasters. Additionally, insights from this study will inform adaptive management strategies and enhance the effectiveness of oyster restoration efforts along the Mississippi Coast.	204A	11:15 AM	11:30 AM

Title	Speakers	Description	Location	Starts	Ends
The Water Connects Us All: Engaging South Louisiana Classrooms in Community-Based Environmental Action	Alvera McMillan	From the bird's foot delta in Southeast Louisiana to the Mississippi River's headwaters in Minnesota, water connects people, places, and ecosystems. This session highlights a two-year NOAA BWET sponsored place-based education initiative designed to equip South Louisiana teachers with the tools, experiences, and community partnerships needed to take student learning outdoors and inspire environmental stewardship: The Water Connects Us All. Participants will learn how phase 1 of the project supports teachers through professional learning experiences and a summer institute centered on Meaningful Watershed Educational Experiences (MWEEs). Through fieldwork, service learning, and reflective practice, teachers develop customized MWEE project plans to lead student-driven environmental investigations and community action projects. The session will offer insights into program design, facilitation strategies, and an adaptable framework for place-based professional learning. Attendees will leave with practical ideas and strategies for building sustainable, place-based education models that connect teachers and students to the land, water, and communities around them. Whether you're new to MWEEs or looking to strengthen your place-based approach, this session provides a unique, actionable model for meaningful, community-rooted environmental education.	203B	11:15 AM	11:30 AM
A Quantitative Assessment of Risk to Seabirds and Migratory Landbirds from Energy Development in the Gulf	Michaela Peterson	Offshore energy development poses risk to birds due to collision mortality, lost foraging habitat, and energetic costs from behavioral disruptions. In this study, we used published habitat suitability and abundance models for seabirds, derived from vessel and aerial survey data, to determine spatially explicit exposure risk to energy development, at varying spatial scales within the Gulf of America. We summarized exposure risk across species, weighting each species' exposure risk by population vulnerability, displacement vulnerability, and collision vulnerability scores to map risk. We developed quantitative risk scores for wind energy areas from combined metrics for exposure and vulnerability. We also assessed risk of energy development to migratory landbirds, based on a literature review and an analysis of incidental observations from pelagic boat surveys and birding excursions. We found that risk to seabirds from energy development is higher in the central Gulf, particularly adjacent to the coasts of Mississippi and Louisiana. For the endangered Black-Capped Petrel (Pterodroma hasitata), all wind energy areas had minimal risk scores, and exposure risk was greatest in the eastern Gulf. Landbirds generally showed greater risk from energy development in the central and western Gulf. Using Brown Pelican (Pelecanus occidentalis) and Northern Gannet (Morus bassanus) as a case study, we tested the effect of analytical spatial scale on risk quantification by comparing assessments from both federal and state waters in the region. The spatial scale of analysis influenced our results substantially, and risk scores for wind energy areas within federal waters differed depending on whether state waters were included or excluded from the analysis. Results from this analysis are compiled for use in decisions regarding offshore wind development and wildlife, and multiple assessment options are provided to allow decision-makers to assess concerns at local and regional scales.	201A	11:15 AM	11:30 AM

Title	Speakers	Description	Location	Starts	Ends
Testing variation in stress tolerance and restoration potential of seagrass subpopulations	Althea Moore	Seagrasses are under threat worldwide from multiple anthropogenic stressors, due to climate change and poor water quality. In Florida, these stressors have resulted in extreme, large scale die-off events. Restoration is one tool to mitigate these events but effective restoration relies on choosing donor populations for cultivation that will be resilient to stressors that threaten seagrass. There is an urgent need to better understand seagrass tolerance to multiple stressors and incorporate resilience to current and future stressors and their interactions into restoration planning and techniques. Further, the slow-growing climax species turtle grass, Thlassia testudium, is difficult to restore from fragments. We are developing methods to restore T. testudinum using shoreline collected 'salvage' seedlings from a broad geographic scale to incorporate genetic variation and population structure across Florida. We present findings on collection and intraspecific variation among seedlings, as well as experimental data on stress tolerance and proteomic data on stress response. Seedlings vary in morphology and genetic composition across field collection sites. Salvaged seedlings showed high stress tolerance across all groups with some individuals more tolerant than others. Intraspecific variation in stress response did not correspond to collection site. Proteomic analysis showed significant differences between stressed and non-stressed seedlings in protein composition and concentrations with some variation between individuals, indicating the potential to develop protein biomarkers for stress response. Our research will contribute to the testing of novel seagrass restoration tools to inform the development of the 10-year Florida Seagrass Restoration Plan under the Seagrass Restoration Technology Development Initiative.	203A	11:15 AM	11:30 AM
Corpus Christi Ship Channel: Potential impacts of channel deepening, oil spills and desalination on recruitment of marine fish and shellfish larvae	Edward Buskey	The Port of Corpus Christi (POCC) exports over 2.4 million barrels of oil per day, which is 60% of US crude oil exports. The ship channel across shallow (depth 8 feet) Corpus Christi Bay has recently been widened to 530 feet and deepened to 54 feet from the POCC to the Gulf to support increased ship traffic. This channel is too shallow for fully loaded Very Large Crude Carrier (LVCC) vessels carrying 2 million barrels of oil. The POCC owns land on Harbor Island in Port Aransas (2 miles from the Gulf) and has proposed two projects for this land. One would be a VLCC port and would deepen the ship channel to 78 feet so these ships can be fully loaded. There are concerns about the cost of dredging and maintaining a deep channel 12 miles into the Gulf, and environmental concerns about possible oil spills affecting sensitive habitats and endangered species. South Texas has been experiencing a severe drought, and freshwater reserves in reservoirs are at 10% capacity. There has been a proposal to build a seawater desalination plant at this same Harbor Island location. This facility would produce 100 million gallons of freshwater a day and discharge a similar volume of brine (2x salinity) into the ship channel, eventuall expanding to 500 million gallons per day. This channel is also the major route for estuarine dependent fish and shellfish species spawned in the Gulf to recruit back to the estuary. Larvae of these estuarine dependent pecies use environmental salinity signals to help these small, weakly swimming larvae to recognize when longshore currents carry them toward passes through the barrier islands. They then use changes in salinity to alter their depth in the channel to allow flood tides to carry them into the estuary. The potential impacts and costs of these proposed infrastructure changes will be discussed in terms of estimated construction and mainenance costs, and environmental impacts.	201C	11:15 AM	11:30 AM

Title	Speakers	Description	Location	Starts	Ends
AI Models for Groundwater Level Prediction: Role of Topographic, Geologic, and Anthropogenic Factors	Ahmed Omar	Continuous groundwater level records are essential for understanding long-term trends in aquifer dynamics and supporting sustainable water resource management. However, monitoring wells in Texas often exhibits data gaps ranging from days in some locations to months in others. These missing observations hinder accurate trend analysis and reduce the reliability of models used for forecasting and planning. Imputing historical gaps using advanced machine learning techniques not only restore data continuity but also enable robust predictions under varying hydroclimatic and anthropogenic conditions. This study investigated the extent to which topographic, geologic, and anthropogenic factors influence shallow groundwater level predictions across heterogeneous aquifer systems in Texas by using observation data from 33 shallow monitoring wells (depths ranging from 10 to 72 m) distributed across six major Texan aquifers. XG-Boost machine learning models were employed to predict groundwater levels from 2002 to 2022. Input variables included hydroclimatic parameters (e.g., ΔTWS from GRACE, precipitation, temperature, and NDVI), geologic properties (e.g., saturated hydraulic conductivity, sand percentage, and aquifer type), topographic features (e.g., elevation and slope), anthropogenic features (such as land use/land cover), and lagged hydroclimatic inputs (such as one-month and two-month lags). To enhance model interpretability, Shapley Additive Explanations (SHAP) were used to identify the most influential predictors. Model performance was robust, with a test-phase Mean Absolute Error of 2.09 m, Mean Squared Error of 13.68 m, and Nash-Sutcliffe Efficiency of 0.96. SHAP analysis revealed that ground elevation and land use/land cover were dominant predictors, however, a wide variability in SHAP values for ground elevation underscores that topography is not uniform across different Texan aquifers and reflects the heterogeneity of the aquifers. For example, in karst systems such as the Edwards aquifer, elevation strongly influences recharge through thin soils and faulted zones. But, confined aquifers such as Carrizo-Wilcox and Gulf Coast, the ground elevation effect will be the opposite as recharge depends on outcrop zones which lie in higher elevations while downdip confined sections exhibit artisan pressure reducing elevation effect. Similarly, the wide range of SHAP values for saturated hydraulic conductivity and sandy texture reflects their limitation as surface-based measurements, which cannot fully capture subsurface heterogeneity of Texan aquifers. In contrast, rapid changes in LULC correlated with lower groundwater levels, reflecting pumping demand. These findings highlight the need for stratigraphy informed models integrated with anthropogenic inputs to achieve more accurate prediction, especially in heterogeneous aquifers.	204B	11:15 AM	11:30 AM
Forging Tomorrow's Lifelines: The Alabama Port Authority's Study and Blueprint for Resilient Infrastructure	Hannah Hart	The Port of Mobile, Alabama's only deep-water maritime gateway, is a critical hub within the southeastern United States' logistics and trade network. Operated by the Alabama Port Authority (APA), this multimodal logistics hub connects maritime, rail, and highway systems to global markets, serving as a cornerstone of regional commerce. In 2024, the APA leveraged funding provided through the Gulf of Mexico Energy Security Act (GOMESA) to launch the Coastal Resilience Study and Adaptation Plan, aimed at strengthening long-term resilience against coastal hazards. The study assessed vulnerabilities and identified adaptive strategies for port facilities as well as interconnected transportation and utility infrastructure. Through this effort, the APA has created a forward-looking blueprint to guide sustainable growth and build robust, future-ready infrastructure that supports the flow of goods and essential services to surrounding communities. This presentation will highlight key findings, proposed adaptation measures, and next steps to enhance resilience and sustainability across the Port's operations.	202A	11:15 AM	11:30 AM

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Title	Speakers	Description	Location	Starts	Ends
Impact of Hydrological Changes and Flood Events on Recruitment of Juvenile Fish and Invertebrate Populations in Mississippi Estuaries	Melody Chaplin	Estuaries in the Gulf of America (Gulf) are experiencing increased temperatures, flood-producing storms, and more extreme weather events. As the climate continues to change, it's important for fisheries managers to understand how environmental conditions influence localized fish and invertebrate populations. Fisheries-independent monitoring data provide valuable insight into juvenile recruitment dynamics, enabling examination of these patterns relative to changing habitat conditions. The Mississippi Sound is an estuary complex naturally influenced by six tributaries, but recent rainfall patterns and a freshwater diversion structure pose considerable threats. Periodic openings of the Bonnet Carré Spillway cause rapid freshwater influxes, altering salinity and exerting significant impacts on resident species. In recent years, the frequency and duration of Spillway openings have increased, with events in 2011 and 2019 resulting in federally declared fisheries disasters. We evaluated relationships between hydrological variability and juvenile recruitment of eight ecologically and economically important species: brown shrimp (Farfantepenaeus aztecus), white shrimp (Litopenaeus setiferus), blue crab (Callinectes spp.), Atlantic Croaker (Micropogonias undulatus), Sand Seatrout (Cynoscion arenarius), Spotted Seatrout (Cynoscion nebulosus), Spot (Leiostomus xanthurus), and Gulf Menhaden (Brevoortia patronus). A 15-year (2009–2023) fishery-independent trawl survey dataset analyzed using generalized additive models with negative binomial error structures assessed the influence of temperature, salinity, river discharge, and Spillway discharge on juvenile abundance. All species exhibited shifts in peak recruitment associated with hydrological variability and Spillway influence, although the direction and magnitude of effects varied among species. In general, freshwater discharge events had stronger effect than changes in temperature or salinity. Discharge effects exhibited strong spatial structure, varying with distance from the freshwater input. Species exhibiting negative responses to river discharge (e.g., brown shrimp and Sand Seatrout) also responded negatively to Spillway diversion, whereas species responding positively to river discharge benefited from moderate Spillway flow. However, extreme or prolonged Spillway openings led to substantial declines, with blue crab exhibiting the only positive response. These findings suggest that diversion strategies mimicking natural discharge variability — favoring a series of shorter, moderate pulses over prolonged, high-magnitude releases — may reduce ecological impacts on nursery habitats while still meeting flood control objectives.	201B	11:15 AM	11:30 AM

Title	Speakers	Description	Location	Starts	Ends
Using the DPSIR framework to inform research and management priorities for the recovery and sustainable use of oysters in Mississippi	Jessica Pruett	The eastern oyster is an integral part of the heritage, economy, and ecology of the northern Gulf region. In Mississippi, oyster populations have suffered several mass-mortality events since the Deepwater Horizon disaster, driven largely by climate-related extreme precipitation events that alter water quality conditions. Oyster reef restoration and revitalization of the oyster industry are top priorities for the State of Mississippi, yet effective planning and implementation require a better understanding of the complex interactions among management actions and the factors influencing oyster abundance, health, and survival. The Mississippi Based RESTORE Act Center of Excellence (MBRACE)is a consortium of the state's four major research universities with the mission to support the sustainable use of coastal resources through a comprehensive understanding of the dynamic Mississippi Sound ecosystem. Using a structured decision-making approach, we characterized the decision context surrounding oyster restoration to help identify research and management priorities needed for the recovery of a sustainable oyster resource. We applied the Driver–Pressure–State–Impact–Response (DPSIR) framework as a conceptual model to illustrate the existing knowledge and challenges to facilitating healthy and sustainable oyster production with economic, ecological, and social co-benefits for the citizens of Mississippi. Key challenges include the impacts of freshwater inputs from the Bonnet Carré Spillway opening and water quality impairments in shellfish-growing areas caused by increased runoff during heavy rainfall events. The DPSIR framework enables MBRACE researchers to more effectively communicate scientific findings to resource managers and policy makers, informing restoration and management decisions while highlighting knowledge gaps to guide future research efforts, climate-driven environmental variability remains a major source of uncertainty for oyster restoration and management, underscoring the need for applied research to support the decision making process.	204A	11:30 AM	11:45 AM
Model-derived metrics for assessing impacts of climate and river management scenarios on Apalachicola Bay	Steven Morey	Apalachicola Bay in the northeastern Gulf historically supported a productive oyster population and a vibrant estuarine ecosystem. In recent years, the bay has experienced a decline in ecosystem health and deterioration of oyster reefs. It has been hypothesized that periods of increased salinity due to extended droughts throughout the watershed and possibly river flow reductions through managed withdrawals have played a role in the decline of the estuary. High-resolution hydrodynamic modeling accurately simulates the bay's hydrographic response to changing river flow and atmospheric conditions, but this type of modeling is very computational expensive. In order to understand how the bay will likely respond to changing climate and alternate water management scenarios, statistical and machine learning models are developed, tested, and applied to modeled river flow data sets. The result is a toolkit for evaluating potential impacts of future climate and reservoir management scenarios on the bay's water properties that are important for ecosystem health.	204B	11:30 AM	11:45 AM

Title	Speakers	Description	Location	Starts	Ends
Addressing Pathogen Pollution through Youth-Focused Participatory Science	Mona Dominguez	The 4-H Alabama Water Watch Program, which is part of the Auburn University Water Resources Center, implemented the NOAA B-WET (Bays Watershed Education Training) funded project, Exploring and Mitigating Pathogen Pollution in Our Waters, from 2019 until 2024. Through the project, 4-H AWW trained over 50 Alabama and Mississippi educators to utilize the project curriculum, Exploring Pathogen Pollution in Our Waters, to lead students in Meaningful Watershed Educational Experiences (MWEEs) focused on understanding, detecting, and mitigating pathogen pollution in local waters. These educators engaged more than 2,200 elementary, middle, and high school students during the project period, which includes bacteriological monitoring bacteria of local waterbodies to detect fecal contamination. Participating schools have submitted nearly 500 data records to the AWW database. Through this project, students have gained real-life experience with data collection, analysis, science communication, problem identification, and development of strategies to address water quality issues. They increased their understanding and appreciation for participatory science and its important role in water quality monitoring, protection, and restoration. The project addressed the Gulf of Mexico Alliance's Education and Engagement and Water Resources Priorities by increasing environmental literacy and encouraging watershed stewardship in the Gulf Region. During this presentation, I will 1) provide a project overview 2) discuss challenges and lessons learned 3) promote the benefits of engaging school groups in community-based water monitoring, and 4) share project outputs, outcomes, and next steps.	203B	11:30 AM	11:45 AM
Development of Interactive Marine Heatwave Analysis Tool	Xiao Qi	Marine heatwaves (MHWs) are extreme temperature anomalies that exist for a prolonged duration in the marine environment and pose significant threats to ecosystems and coastal communities through heat stress and the effects of severe weather events. For these reasons, the continuous monitoring and understanding of MHWs is integral for science, policy and management decisions. However, in coastal oceans and estuaries, where impacts are expected to be acute, large-scale data products typically used in MHW analyses are often too course to be informative. To address these issues, an integrated network of coastal observation platforms and high-resolution remote sensing data in the Gulf of America has been used to develop a regional MHW monitoring and analysis tool. The comprehensive interface on the Gulf of America Coastal Ocean Observing System (GCOOS) webpage provides both real-time and historical statistics for MHWs and along with flexible event detection based on daily thresholds, monthly thresholds, and degree heating weeks. Additionally, the tool incorporates satellite temperature anomalies and the ability to define MHWs based on user needs, while displaying characteristics of notable events at each location. The improved monitoring of MHW events has the potential to greatly improve the relevance of monitoring to managers and stakeholders interested in the nearshore environment, and to provide marine data relevant to the complex and multidimensional interactions between a warming climate and habitat health, citizen science, and socio-economic monitoring.	201C	11:30 AM	11:45 AM

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Title	Speakers	Description	Location	Starts	Ends
Monotonic and evolving trends in water quality and streamflow signatures across the Mobile Bay Watershed	Latif Kalin	Detecting and understanding long-term and evolving changes in water quantity and quality is critical for sustaining ecosystem function and guiding adaptive watershed management under changing socio-economic conditions. In this study, we assess both monotonic and evolving (non-stationary) trends in streamflow and water quality across the Mobile Bay Watershed (MBW) in the Northern Gulf of Mexico. We combine traditional Mann-Kendall (MK) and Sen's slope estimators with a Rolling Window Mann-Kendall (RW-MK) framework to capture persistent and episodic changes in hydrological and biogeochemical dynamics. Using observed streamflow and water quality records from 1982 to 2020, we examined trends in annual, monthly, and ecologically relevant flow metrics, alongside trends in nutrients and sediment concentrations, water temperature, dissolved oxygen, and salinity levels. Whole-period MK analysis revealed widespread streamflow declines (59 of 61 sites) and significant increases in nitrate (19 of 29), organic nitrogen (12 of 19), organic carbon (10 of 15), and water temperature (24 of 31), while phosphate, ammonium, and sediment concentrations generally decreased. These changes coincided with urban expansion, reductions in agriculture and forest cover, and regional climate shifts marked by increasing temperature (~0.3 °C decade) and precipitation (+33 mm decade). The RW-MK analysis revealed additional "trends within trends," identifying sub-periods of significant declines in both low and high flows and temporal shifts in estuarine salinity closely correlated with freshwater discharge variability. By integrating monotonic and rolling-window analyses, our findings indicate that hydrological and biogeochemical trends in the MBW are not temporally uniform but evolve in response to interacting climate and land-use drivers.	201B	11:30 AM	11:45 AM
Does higher genetic variation in seagrass beds confer greater resilience to heat stress?	Emily Leonard	Seagrass beds are among the most productive ecosystems. Warming events and other abiotic stressors, however, are causing widespread declines in seagrass productivity. These stressors can be difficult for managers to reduce or remove. Previous research indicates that increased genetic diversity within a population may enhance resistance and recovery (i.e., resilience) to stress. Halodule wrightii, a seagrass species used in restoration in the Gulf of Mexico, inhabits shallow waters vulnerable to heating and beds exhibit a range of genotypic variation. Yet, the relationship between genotypic variation and resilience to heat stress for this species is unclear. To test this hypothesis, a mesocosm experiment was done at Mote Marine Laboratory's Aquaculture Research Park in Sarasota, Florida. Twenty-four H. wrightii patches were collected from St. George Island State Park, Apalachicola, Florida, a site known to be high in genotypic diversity. These patches were ≥ 8 m apart to increase the chances of each being a unique genotype. Patches were planted into containers to produce replicate beds of increasing genotypic levels. Replicates were assigned to one of twelve raceways. An additive approach was used, and each replicate was planted at the same density. Following a three-week acclimation period, half of the raceways were ramped to 35 °C for a two-week heat stress followed by seven weeks at 27 °C for recovery. The other half of the raceways remained at 27 °C. Throughout, productivity was measured as shoot length, shoot density, and chlorophyll-a fluorescence. Biomass was taken at the end of study. Heat appeared to benefit productivity. After seven weeks, heated replicates had higher shoot density and biomass than controls. Microsatellite genotyping is being done to verify the genotypic variation planted and relate variation to resilience. Results will be used to provide insights into the use of genetic variation for optimizing restoration success.	203A	11:30 AM	11:45 AM

Title	Speakers	Description	Location	Starts	Ends
Co-production to inform transboundary management of seabirds in the Gulf of America	Jeffrey Gleason	Given complex legal statutes that apply across marine, estuarine, freshwater, and terrestrial habitats, transboundary life histories pose management challenges for marine birds. Evidence-based management requires integrating needs and constraints of decision-makers and scientists. Impacts from marine research are thus amplified using co-production across stakeholders. We present a brief history of co-production in ocean-going seabird research in the Gulf of America. The 2010 Deepwater Horizon (DWH) oil blow-out and spill revealed an acute lack of information about Gulf avian resources. Monitoring for Gulf birds required commitments from an array of conservation partners, including federal agencies, state wildlife agencies, non-governmental organizations, joint venture partnerships, and landscape conservation cooperatives. Consequently, the volunteer Gulf of Mexico Avian Monitoring Network (GoMAMN) established a community of practice to: (1) carry out restoration objectives and monitoring priorities; (2) design and implement surveys; and (3) share information. GoMAMN identified aerial and vessel-based surveys as vital for expanding the knowledge base for seabirds in the Gulf. The Gulf of Mexico Marine Assessment Program for Protected Species (GoMMAPPS; BOEM-sponsored, 2017-2019) and Vessel Surveys for Abundance and Distribution of Marine Mammals and Seabirds (VSAD; DWH Open Ocean TIG-sponsored, 2023-2025) were implemented subsequently. Each Gulf survey program required co-production from NOAA, BOEM, USFWS, USGS, academic institutes, and for- and nonprofit organizations. Gulf survey data from these and other projects yielded evidentiary criteria for: (1) updating seasonal status, distribution, and relative abundance for >100 marine bird species; (2) evaluating chronic hydrocarbon exposure to marine birds at offshore oil and gas platforms; (3) identifying primary composition and geographic origins of restoration-eligible species; and (4) detecting range extension in an imperiled species. Future Gulf work is expected to evaluate seabird flight behavior around marine energy infrastructure, develop a spatially-explicit means to estimate seabird densities impacted at marine spills, and classify species disproportionately affected by the DWH spill.	201A	11:30 AM	11:45 AM
Pensacola Bay Oyster REEF (Restoration, Education & Engagement Framework)	Samantha Pitts	The Pensacola and Perdido Bays Estuary program launched the Pensacola Bay Oyster REEF (Restoration, Education and Engagement Framework) curriculum in Spring 2023. Utilizing the NOAA MWEE (Meaningful Watershed Educational Experiences) framework, the curriculum engages high school teachers and students through inquiry-based field trips, analysis of local data sets and student-led environmental action projects to explore the current status of Pensacola Bay oysters and restoration initiatives. A week-long teacher workshop provided valuable background information and technical expertise for teachers to guide curriculum implementation in their classrooms. Students analyzed data collected by technical partners as part of the Oyster Restoration Initiative, including habitat suitability models, local spat monitoring data sets and community feedback surveys to identify and implement oyster tree restoration projects. Pre- and post assessment tools demonstrated tangible learning outcomes for both teachers and students. Staff intend to use the lessons learned from this initial implementation to adapt the curriculum to a large suite of lesson plans and educator resources designed to engage local students in exploration of complex watershed issues through the lens of Pensacola Bay Oysters. The Pensacola Bay Oyster REEF Project was funded by the NOAA B-Wet Grant Program.	203B	11:45 AM	12:00 PM

Title	Speakers	Description	Location	Starts	Ends
Non-Marine Avifauna Observed During Seabird Vessel Surveys in the Northern Gulf	Jeffrey Gleason	We used vessel-based observations from the Gulf of Mexico Marine Assessment Program for Protected Species (GoMMAPPS) to identify and characterize distinct bird assemblages in the northern Gulf of America (within the U.S. EEZ; aka Gulf of Mexico, hereafter nGulf). Vessel-based surveys documented the date:time, location, species, and number of birds across the nGulf between 2017–2019. Though our surveys specifically targeted seabirds, we also collected observational data for myriad species of non-marine avifauna. Data were collected following standardized strip transect protocols for seabird observations from vessels. All data were entered in real-time onto a Panasonic Toughbook™ using Program SEEBIRD (Vers. 4.3.7) software. Observations occurred over 293 days-at-sea representing ~2,300 hrs of observer effort covering ~41,700 transect km. We had 1,345 records of 6,977 individuals representing 77 species classified as non-marine avifauna. Records classified as non-marine avifauna accounted for 12.6% of all avifauna detections, 13.7% of all individual birds, and 63.1% of all avifauna identified to species. Landbirds were the most frequently detected guild of non-marine avifauna based on species richness (~62%), number of detections (~61%), and number of individuals (~53%). Despite comparable levels of survey effort in spring, summer, and fall, ~70% of non-marine avifauna were observed in fall (September – November). Interest in GoMMAPPS seabird survey data remains high by both regulatory agencies and the broader nGulf bird conservation community, particularly as it relates to proposed offshore energy and aquaculture development.	201A	11:45 AM	12:00 PM
Long-Term Hydrographic Variability and Habitat Trends in the Mobile–Tensaw Delta–Mobile Bay System (1970–2025)	Zhilong Liu	The Mobile–Tensaw Delta–Mobile Bay system encompasses a mosaic of habitats that sustain rich ecological diversity and valuable fishery resources. Quantifying the hydrographic variability and habitat trends of this system is essential for assessing fisheries dynamics and informing effective resource management. However, such efforts are complicated by the highly transient nature of river–estuary interactions, the shallow and spatially heterogeneous morphology, and gradual but persistent climatic influences. To address this knowledge gap, we conducted a 56-year high-resolution hindcast (1970–2025) using a cross-scale coastal ocean model. The model outputs were analyzed to elucidate interannual and decadal patterns in temperature, salinity, and habitat extent, providing insights into long-term environmental trends. Furthermore, the relationships between these hydrographic trends and major forcing factors, including river discharge variability, navigation channel deepening, and El Niño–La Niña oscillations, were examined to identify the primary drivers of system change. The resulting datasets establish a robust quantitative foundation for fishery stock assessments and provide scientifically grounded insights to guide ecosystem-based management of living resources in the Mobile Bay region.	201B	11:45 AM	12:00 PM
NOAA Atlas 15: A Precipitation Frequency Tool to Help Build Resilience	Joelle Godwin	The Gulf states are experiencing more intense rainfall and increasingly frequent flooding, as well as longer droughts that stress communities and ecosystems. It is crucial that water resources practitioners, policy makers, and communities at large are equipped with the precipitation information they need to make water resources and transportation infrastructure more resilient to changes in rainfall patterns and their consequences in flooding and subsequent effects. This session will discuss the update to the National Oceanic and Atmospheric Administration's (NOAA) precipitation frequency estimate, Atlas 15, and explore the ways in which transportation professionals can use the product to improve and make climate-smart decisions around flood risk assessment and infrastructure design. It will cover the significant changes to Atlas 15 compared to Atlas 14, demonstrate the new web interface, discuss how this new dataset will address needs shared by end-users. We will also present a range of use cases to showcase possible ways communities can adopt this data and tool use to support their resilience.	201C	11:45 AM	12:00 PM

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Title	Speakers	Description	Location	Starts	Ends
How the Mississippi-Based RESTORE Act Center of Excellence and the Mississippi-Alabama Sea Grant Consortium Support Mississippi Oysters	Jillian Sower	The Mississippi-Based RESTORE Act Center of Excellence (MBRACE) was established in 2016 and is focused on researching water quality and oyster-related topics in Mississippi waters. Throughout this time, MBRACE has collaborated with the Mississippi-Alabama Sea Grant Consortium (MASGC) to develop and implement outreach and engagement activities. This talk will provide an overview of the various collaborations between these two entities focusing on oyster research and engagement activities from the perspective of an early-career science policy fellow. I will discuss my role working with both organizations as a fellow and describe the numerous opportunities I have had to assist each in their oyster-related projects. For example, I will discuss how I have assisted with developing research goals, led a community oyster program in both Mississippi and Alabama, and developed synthesis materials from MBRACE's research investments over its 10-year history. This talk will highlight the successful collaboration between two important organizations for Mississippi coastal research as well as share opportunities for other early-career scientists interested in coastal work along the Gulf.	204A	11:45 AM	12:00 PM
A Collaborative Approach to Submerged Aquatic Vegetation (SAV) Restoration to Ensure Future Ecosystem Services in Florida	Jonathan Brucker	AquaTech Eco Consultants, in partnership with Ecosphere Restoration Institute, recently completed 100 acres of submerged aquatic vegetation (SAV) restoration across Florida. This effort, funded through the Florida Department of Environmental Protection (FDEP) Grant LPA0282, is one of the largest and most ambitious SAV initiatives in the state's history. SAV plantings occurred across four of the five water management districts and eleven counties in the state of Florida. Restoration efforts involved the implementation of innovative survey and planting techniques, sourcing robust SAV species like Vallisneria, Halodule, and Thalassia to maximize survival rates and promote healthy growth, and employing a collaborative approach, partnering with key stakeholders, including Aquaticus Plants, FDEP, United States Army Corps of Engineers (USACE), Water Management Districts, the Florida Fish and Wildlife Conservation Commission (FWC), Martin County, and others, to ensure restoration efforts and submerged resource management goals aligned. Further, AquaTech aims to be at the forefront for obtaining all required state (i.e., FDEP), federal (i.e., USACE), and local (i.e., Tampa Port Authority) permits for SAV restoration by designing projects with a high chance of success while minimizing and avoiding impacts to submerged resources and species. Specifically, AquaTech has embraced FDEP's new General Permit for Seagrass Restoration to streamline and expedite SAV restoration projects. By utilizing advanced planting techniques, being proficient at obtaining permits, and aligning projects with submerged land management strategies, AquaTech continues to be a leader in restoring Florida's valuable aquatic ecosystems. AquaTech's efforts have facilitated the restoration of vital habitat for many of Florida's ecologically, recreationally, and commercially significant species, including the manatee, sea turtles, speckled sea trout, bay scallops, and others. The positive ecological impact of this project extends beyond the immediate restoration area. By revitalizing these aquatic habitats, the initiative contributes to enhanced biodiversity, improved water clarity, and increased recreational opportunities. This restoration work is essential for the long-term health and sustainability of Florida's aquatic ecosystems. AquaTech and EcoSphere have received additional LPA0282 funding to restore an additional 70 acres to continue these statewide efforts, driving meaningful and long-term improvements to Florida's critical habitats and waterways.	203A	11:45 AM	12:00 PM
National Academies of Sciences, Engineering, and Medicine's Gulf Research Program Overview	Matthew Stilwell	Introduction to the Place-based Education in the Gulf session. The National Academies of Sciences, Engineering, and Medicine's Gulf Research Program (GRP) aims to increase the scientific and environmental literacy and problem-solving skills of youth in the Gulf region. They achieve this in many ways, one of which is supporting the work of numerous place-based and project-based organizations. This support has allowed the Gulf states to increase their ability to provide environmental education opportunities for youth. The subsequent presentations in this session (along with a few others throughout GulfCon) will all demonstrate different ways that the GRP has been supporting place-based learning in Gulf communities.	203B	1:30 PM	1:45 PM

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Title	Speakers	Description	Location	Starts	Ends
Lessons learned from science synthesis projects in the Chesapeake Bay Watershed	Kenneth Hyer	Chesapeake Bay is one of the best studied estuaries on the planet. Long-term monitoring programs, combined with active academic and agency science programs, have resulted in a plethora of data, analyses, reports and scientific papers regarding Chesapeake Bay and the watershed. With all of this data and information, there is a need to clearly synthesize, interpret and apply the knowledge to inform ecosystem protection, restoration, and conservation. By developing a collaborative scientific culture, agencies have partnered with one another in the Chesapeake to successfully implement challenging synthesis projects. In this overview, we analyze various science synthesis projects to better understand how to effectively utilize the synthesis approach and draw out lessons from this experience. Science synthesis topics covered will include (1) scoping management-relevant science questions (2) synthesis team development, (3) data aggregation and harmonization, (4) technical analysis, and (5) science communication. Case studies will include syntheses related to: Water-quality (nutrient) patterns and response Submerged aquatic vegetation patterns Sediment transport processes Stream restoration Fish habitat and health assessments Consideration of these lessons learned when developing new science syntheses can result in more impactful technical products and, consequently, the implementation of more meaningful management and policy decisions.	201D	1:30 PM	2:00 PM
Remote Sensing and Natural Resource Damage Assessment (NRDA)	Scott Friedman	Remote sensing data collected from drones, fixed-wing aircraft, and satellites have been used, in the context of Natural Resource Damage Assessment (NRDA), to quantify injuries and monitor the success and effectiveness of restoration projects. These platforms provide objective, repeatable, large-area measurements following oil spills, chemical releases, wildfires, and other disturbances. Remote sensing may be used to map open water oil sheens, shoreline oiling, vegetation die-off, wildlife presence, wetland structure, erosion, turbidity, recovery of habitats following disturbances, and pre-incident baselines. Further, elevation and structural datasets capture geomorphic and hydrological impacts and remote sensing can support long-term monitoring of restoration performance. Use of remote sensing platforms can also increase spatial coverage of assessments and reduce reliance on field sampling, reducing safety risks and costs. These measurements, among other things, may be used in the context of NRDA to define injury boundaries, quantify severity, and estimate other inputs for use in Habitat and Resource Equivalency Analyses (HEA and REA). Although challenges exist (e.g., calibration, atmospheric effects, and ground-truthing), remote sensing has the potential to become a cornerstone of scientifically robust and legally defensible damage assessments. This talk will provide examples of the application of remote sensing in damage assessment, common challenges, and potential opportunities for future applications.	202B	1:30 PM	1:45 PM

Title	Speakers	Description	Location	Starts	Ends
Scaling the ePredictor for Include All Texas Coast Sampling Sites	Felimon Gayanilo	The Beaches Environmental Assessment and Coastal Health (BEACH) Act was passed by Congress in 2000 to protect public health in coastal recreational waters. It established uniform criteria for testing, monitoring and notifying the public users of possible coastal recreation water problems. It also requires that states, in cooperation with EPA, develop and implement a program to monitor, for pathogens and pathogen indicators, coastal recreation waters adjacent to beaches that are used by the public and to notify the public if water quality standards for pathogens and pathogen indicators are exceeded. In July 2001, the Office of the Governor appointed the Texas General Land Office (GLO) as the lead state agency responsible for implementing the provisions of the BEACH Act, as they applied to the state, because of its existing Beach Watch Program. This program started in the late 1990s as a fledgling water-quality monitoring program funded by the Coastal Management Program. The Texas Beach Watch (TBW) program currently monitors water quality at more than 172 beach sites for Enterococcus bacteria. Following the successful development, deployment and evaluation of the AI-enabled Enterococcus predictor (ePredictor) presented at GOMCON 2024, GLO and the Harte Research Institute at Texas A&M University–Corpus Christi expanded the system to support statewide operational use. In this phase, the project scaled predictive modeling from the original 15 test locations to all monitored beach sites along the Texas coast. The modeling framework continues to utilize Univariate and Multivariate Multi-Step configurations, incorporating additional environmental variables, including precipitation, alongside previously used inputs such as salinity and water temperature. To further strengthen predictive skill, the project also evaluated additional algorithms such as Recurrent Neural Networks (RNN) and Random Forest. As part of efforts to improve public accessibility and decision-support capabilities, an interactive statewide heat map was developed to highlight high-alert locations in real-time. The ePredictor iOS application has been released with integrated prediction and heat-map features, and an Android version is currently undergoing testing. Ongoing work includes implementing automated alert emails that notify subscribed users when conditions at selected beach sites indicate elevated bacterial risk. This presentation will summarize the statewide deployment, expanded modeling approaches, and new user-oriented tools designed to accelerate the delivery of beach water-quality information to agencies and stakeholders.	204B	1:30 PM	1:45 PM
CETACEAN Data Portal: A Gulf Open Ocean Platform Connection Population, Anthropogenic, and Environmental Data	Megan Howson	The Compilation of Environmental, Threats, and Animal Data for Cetacean Population Health Analyses (CETACEAN) Data Portal, developed by the Gulf of America Coastal Ocean Observing System (GCOOS) with funding from the Deepwater Horizon Open Ocean Trustee Implementation Group, supports the effort to understand open ocean and pelagic ecosystems by centralizing data on cetaceans and their environment in the Gulf of America. The CETACEAN Data Portal integrates biological, environmental, and anthropogenic datasets to enable users to explore relationships among cetacean (whales and dolphins) distributions, stressors and threats, and ecosystem drivers to help inform restoration managers and stakeholders. Hosted on a cloud-based GIS Hub, the portal enhances access to standardized datasets and supports visualization and analytical tools that enable users to investigate spatial and temporal trends in marine mammal health and exposure to threats such as vessel traffic, underwater noise, and environmental variability. By facilitating data discovery and synthesis across disciplines, the CETACEAN Data Portal helps illuminate ecological connections and supports restoration and conservation planning The hub further serves as a model for using open-access, GIS-based systems to improve the understanding of open ocean ecosystem linkages, inform adaptive management, and advance restoration of oceanic species and habitats in the Gulf of America.	106B	1:30 PM	1:45 PM

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Title	Speakers	Description	Location	Starts	Ends
From Scars to Solutions: End-User Driven Research for Seagrass Conservation and Management	Holly Abeels	Propeller scarring is a significant anthropogenic disturbance that threatens seagrass resilience in Florida's Nature Coast Aquatic Preserve (NCAP), where intact meadows provide critical ecosystem services, including sediment stabilization, water quality improvement, and nursery habitats for ecologically and commercially important species. Severe scarring hotspots, as documented through field observations and feasibility studies, highlight the urgent need for targeted management actions. Building on priorities identified in the NCAP management plan, our interdisciplinary project Seagrass Conservation through Actionable Research: Management Areas for the Prevention of Scarring (SCAR MAPS) employs a co-production framework to address data gaps and inform restoration and protection strategies. This approach integrates spatial mapping, ecological monitoring, and stakeholder-driven decision pathways to ensure actionable outcomes. We actively engage end-users, including resource managers, local fishing guides, NGOs, restoration practitioners, commercial fishermen, and advocacy groups, through biannual hybrid advisory meetings and monthly sessions with NOAA and state and local partners. These interactions guide research products, identify feasible management interventions, and align with the state-level 10-year strategy for seagrass conservation and management for Florida's NCAP. By incorporating end-user input and interdisciplinary science, SCAR MAPS enhances Gulf-wide efforts to prevent and mitigate propeller scars, thereby contributing to seagrass resilience, informed restoration planning, and long-term ecosystem health. This presentation will share lessons learned from collaborative engagement and co-production, and how they guide and inform the research and implementation goals for SCAR MAPS.	203A	1:30 PM	1:45 PM
Environmental drivers of fisheries variability in Mobile Bay: Trends and relationships with oyster, crab, and finfish populations	John Lehrter	In many coastal systems, pertinent management questions are: What are the predominant stressor trends? and How do they impact fisheries? Here, we focused on addressing these questions in Mobile Bay, AL, where river discharge, salinity, and temperature extremes act as stressors on important fisheries species: eastern oyster, blue crab, spotted sea trout, and southern flounder. Based on long-term observations, there is a declining trend in river discharge to Mobile Bay from the Alabama and Tombigbee rivers (mean discharge 1,800 m3 s-1), with increased frequency of low flows since the 2000s. As a result, salinity in the bay is trending up and there can be large increases in salinity, especially in the upper bay and delta, during low flows. Concurrently, there is a significant warming trend of 0.08 °C y-1, with a notable increase of 2 °C since 2020. In order to develop comparable time-series data spanning the same time period and locations as fisheries data (described below) we used numerical models for watershed hydrology (SWAT) and bay hydrodynamics (SCHISM). The models were calibrated and validated with the observations to create time series of freshwater discharge, salinity, and temperature from 1970 to 2025. The modeled time-series were analyzed relative to fisheries independent monitoring data for oyster, crab, trout, and flounder from 1970s to 2020s. Several simple, robust relationships between temperature, salinity, and fishery population deviations were identified: Poor oyster recruitment occurred after warm summers with extended marine heat waves. Increased salinity and warmer temperatures were positively associated with population deviations for spotted seatrout and blue crab but negatively associated with southern flounder. These are novel findings that enable a better understanding of inter-annual variations in important fishery populations. They are also useful for managers to provide better explanations of harvest variability and harvest limit decisions.	201B	1:30 PM	1:45 PM

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Title	Speakers	Description	Location	Starts	Ends
Safeguarding Coastal Waters and Public Health: Fecal Coliform Monitoring at the MDMR Microbiology Laboratory	Becky Hardgrove	The Mississippi Department of Marine Resources (MDMR) Microbiology Laboratory plays a vital role in protecting public health and maintaining the integrity of Mississippi's coastal waters through comprehensive fecal coliform montioring. As part of the state's Shellfish Sanitation Program, the laboratory conducts routine microbiological analysis of water samples collected from designated shellfish growing areas thoughtout Mississippi coastal waters. Fecal coliform testing serves as a critical indicator of water sanitation and quality. Data generated by the laboratory is used to assess environmental conditions, determine shellfish harvest classifcations, and support timely management decisions regarding area openings and closures. This presentatioin will outline the laboratory's testing approaches, including the Most Probable Number (MPN) method, quality assurance protocols, and compliance with National Shellfish Sanitation Program (NSSP) standards. It will also emphasize how the laboratory's results support public heatlh and safety of commerically harvested shellfish. Through its committment to scientific accruacy and public service, The MDMR Microbiology Laboratory demostrates the important connection between microbiology and public safety in the Mississippi Gulf region.	204A	1:30 PM	1:45 PM
Digital Storytelling: How Social Media Builds Connections to Place	Chelsea Prince	Social media is one of the most powerful tools we have to connect people to place. Through the Mississippi Gulf Coast National Heritage Area, we've learned how to turn everyday posts into meaningful stories that celebrate our coastal culture, inspire pride, and spark action. This presentation will introduce beginners to using social media as a storytelling and outreach tool for heritage, preservation, and environmental education. I'll share how our team works alongside local partners, museums, libraries, and community organizations has used digital platforms to highlight landmarks, history, and our natural landscape across the Mississippi Gulf Coast. The session will also provide an overview of tools available within popular social media platforms to help users grow their reach, set realistic goals, and track progress. I'll share additional free and low-cost resources that have been helpful in building engagement and collaboration. This approach proves that social media success doesn't have to be complicated, it just needs to be authentic, genuine, and connected to your mission. Attendees will leave with practical strategies, creative ideas, and real-world examples they can easily apply within their own communities, proving that digital storytelling can be one of the simplest and most effective ways to strengthen connections, inspire preservation, and build resilience along the Gulf Coast.	106A	1:30 PM	1:45 PM
The Impact of Laws on Coastal Nesting Bird Protection	Kristina Alexander	A recently completed project examined what could be done to increase protection of nesting birds on the Texas coast. The research revealed clear distinctions between federal laws, such as the Endangered Species Act and the Migratory Bird Treaty Act, and Texas counterpart laws. Additionally, Texas state law has a complicated protection scheme that may leave both citizens and law enforcement officials unclear on what behavior is prohibited around coastal nesting birds. This presentation will present the findings of that research, and offer ideas on how to address protection using legislative, regulatory, or common sense methods.	201A	1:30 PM	1:45 PM

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Title	Speakers	Description	Location	Starts	Ends
Collaborative and Multi-Objective Approach to Prioritizing Nature-Based Solutions for MacDill Air Force Base	Soupy Dalyander	MacDill Air Force Base (AFB) faces significant challenges of shoreline erosion and flooding that are likely to worsen in future years. The configuration of the AFB provides opportunities to employ nature-based solutions (NBS) to protect facilities while supporting ecosystem service co-benefits and habitat creation. Potential opportunities for NBS include restoring the historical longshore bar system, expanding existing submerged shallow shelf habitat, and creating barrier islands. Such actions require substantial planning, cooperation, and coordination across local, state, and federal decision-makers, stakeholders, and regulatory agencies. Early engagement is critical to success, including for environmental permitting. A novel approach is being used here that follows the principles of Structured Decision Making (SDM), a transparent and objective-orientated approach to identifying actionable alternatives for complex problems where there are multiple interested parties. First, facilitated working sessions were held with regulatory and resource management representatives to identify implementation objectives, impediments, and strategies for mitigation; estimate likely NBS outcomes; and identify critical uncertainties. These objectives included maximizing wave and surge attenuation; maintaining or increasing submerged aquatic vegetation (SAV) and other valuable habitat; limiting the potential for bird-aircraft strikes and other security concerns; and minimizing regional erosion. Key uncertainties included the degree to which SAV could be positively or negatively impacted; how NBS would impact the risk of bird-aircraft strikes; and the magnitude of wave attenuation, surge protection, and downstream erosion influence the NBS alternatives would have. Based on that input, the team identified methods to address those key uncertainties and evaluate alternatives. A numerical hydrodynamic, wave, and sediment transport model was developed, along with analytical approaches to assess the potential impacts of alternatives to SAV and bird-aircraft strike hazards. The initial NBS options were refined into a set of preliminary designs, which were evaluated and assessed with quantitative metrics derived from the analysis. These results were used to consider outcomes and tradeoffs, and to inform the 30% engineering design. We will present the results and the next steps in this ongoing, collaborative process with regulatory authorities and regional stakeholders.	201C	1:30 PM	1:45 PM

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Title	Speakers	Description	Location	Starts	Ends
Alabama Floodplain Assessment Project: An Assessment of Flood Risk at State-Owned Properties	Carl Ferraro	In accordance Executive Order No. 737, issued by Governor Kay Ivey on October 13, 2023, which requires that all existing state-owned properties be assessed to ensure compliance with the National Flood Insurance Program flood plain management criteria, the Alabama Department of Insurance (ADOI) initiated the Alabama Floodplain Assessment Project. The goal of the Project is to determine the number and location of state-owned properties that contain structures (as defined in 44 C.F.R. § 59.1) that are located within a flood-prone areas, and then conduct an assessment and inspection of those structure to document compliance with the National Flood Insurance Program floodplain management criteria for flood-prone areas, for mudslide-prone areas, and for flood-related erosion-prone areas. In November 2024, ADOI retained Stantec to assist in implementation of the Project and project work commenced in January 2025.During the initial phased of the Project, Stantec conducted a GIS-based analysis of all state-owned properties to determine which state-owned properties contain areas designated as floodplains, and which, if any, of the structures located on those properties are within the designated floodplain. The next phase consisted of Pilot Field Assessments of six (6) state-owned sites in Mobile and Baldwin Counties that contained structures within the floodplain. This was followed by Site Assessments at state-owned properties across the entire State of Alabama. During the summer and fall of 2025, over 600 state-owned buildings were assessed, with elevation certificate surveys also being conducted for most of the buildings & structures. During late 2025 and early 2026, final Assessment Reports, with rough order of magnitude cost estimates for bringing non-compliant buildings into compliance, will be produced. This presentation will summarize the project goals, our approach and methodology for each phase and a summary of project results. Next steps will also be highlighted.	202A	1:30 PM	1:45 PM
CANCELED TALK Strategic Communication in Practice: Communicating Risk Effectively	Heather Mannix	Do you need to communicate risk effectively and strategically to others? If your work has any implications for decision-making, we at COMPASS Science Communication believe the answer is yes. Whether it's sharing the complexity and tradeoffs of management decisions, or translating technical information for community planning, effective risk communication can improve comprehension and decision making, while building trust and relationships in the process. The Gulf region has faced a variety of environmental and human-caused challenges that have significantly impacted both communities and ecosystems. These include acute events such as hurricanes and oil spills, as well as ongoing stressors like sea level rise, land subsidence, and water quality degradation. As these challenges persist, effective risk communication will be crucial for informing communities, building trust, and promoting informed decision-making during emergencies and everyday situations. Effective risk communication ensures that people understand potential hazards and impacts, and how to respond effectively. Research shows that scientists and technical experts are some of the most effective messengers when it comes to engagement with non-science audiences, but it can be challenging to communicate risk to others in compassionate, meaningful ways. We know more than ever about how risk information is processed in the brain, and applying those insights to our risk communication will help our audiences better understand risk and make more informed decisions about their health, safety, and the environment around them. During this presentation, we will discuss the science behind risk communication and share advice for developing key risk messages to be more meaningful, compassionate, and actionable. Since 1999, COMPASS has supported scientists to communicate their work and engage in clear, lively terms, pairing fundamental skill building with strategies and connections to drive impact.	106A	1:45 PM	2:00 PM

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Title	Speakers	Description	Location	Starts	Ends
FPM AI: An Integrated, AI-Powered Framework for Floodplain Management	Yusuf Sermet	Floodplain managers repeatedly describe the same reality: FEMA maps in one browser tab, local GIS in another, paper and PDF permit files on the desk, and a constant struggle to explain complex rules to residents, developers, and officials. Building on our 2024–2025 qualitative study with ASFPM-member practitioners across eight states (including Gulf Coast representation), we translated those workflow insights into a fully implemented, AI-enhanced floodplain management platform that is now ready for real-world use and piloting. The web-based platform unifies core FPM tasks in a single interface: parcel-level flood zone lookup with FEMA and state layers; automated permit pre-screening that explains, in plain language, when floodplain review is likely required; guided digital permit intake; automated elevation certificate (EC) verification against mapped base flood elevations; jurisdiction-aware regulatory Q&A chat; configurable public notices and “near-me” alerts; and simple scenario viewing of potential flooding. AI is used selectively, with human oversight, where it clearly adds value: multimodal large-language-model–driven regulatory guidance is constrained by a jurisdiction-specific rules engine and citation system; document parsing supports EC checks but never replaces professional judgment; and all automation pathways preserve complete audit trails for NFIP and CRS documentation. The platform’s architecture explicitly supports state- and community-specific ordinances, freeboard requirements, and mapping practices identified in our interview study as barriers to “one-size-fits-all” tools. This presentation will (1) briefly recap key interview findings; (2) demonstrate the working platform from both public and staff perspectives; (3) describe the underlying AI and rules architecture; and (4) discuss adoption pathways, governance, and how interested Gulf jurisdictions can participate in pilots and future enhancements.	204B	1:45 PM	2:00 PM
Under Our Feet: Revealing Mobile’s Stormwater Network Through a Comprehensive Mapping Initiative	Emma Cochran	The City of Mobile is implementing a comprehensive GPS/GIS initiative to map its entire stormwater system, providing a survey-grade inventory of all structures and their associated pipes. As Mobile experiences increasingly intense rainfall events and localized flooding, understanding the capacity and condition of the stormwater system has become essential. A complete and accurate stormwater system map allows the City to identify deficiencies, predict storm water behavior, and prioritize maintenance and improvements. It also enhances the City’s ability to plan and respond effectively during storm events. Phase I of the project, completed in 2024, documented all stormwater structures within the 2021 City limits. Survey teams collected survey-grade data on inlets, manholes, cleanouts, outfalls, and connecting pipes, documenting each feature’s depth, size, material, and physical condition. All surveyed features underwent a rigorous QA/QC process before being imported into a GIS database, where their spatial relationships and flow connectivity to pipes, ditches, and channels were added. Phase II expands the effort to include three areas annexed by the City in 2023, ensuring the stormwater inventory reflects Mobile’s current geographic footprint. Once fully completed, this mapping effort will provide Mobile with a strong foundation for decision-making, improved flood mitigation, and more efficient stormwater system management across the entire city. This presentation will detail the data collection process, collaborations, challenges encountered, lessons learned, and the innovative solutions applied to ensure accuracy and efficiency. It will also preview forthcoming applications of the completed stormwater map, illustrating how this dataset will support planning, project design, emergency response, and long-term stormwater infrastructure management.	202A	1:45 PM	2:00 PM

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Title	Speakers	Description	Location	Starts	Ends
Home Sweet Home? Using oyster feeding rates to develop a site suitability tool	Jessica Lunt	Oysters are critical foundation species in estuarine ecosystems, providing essential ecological and economic services. Through suspension feeding, oysters directly influence coastal water quality and benthic–pelagic coupling by removing particulate organic matter from the water column. However, oyster populations worldwide have declined sharply due to overfishing, habitat loss, eutrophication, and climate-related stressors. Effective restoration and aquaculture efforts therefore require a mechanistic understanding of the physiological and environmental factors that govern oyster feeding, growth, and resilience under changing coastal conditions. Using an in-situ filter feeding device we are investigating oyster feeding ecology in the Mississippi Sound across a range of conditions in addition to comparing diploid and triploid Crassostrea virginica. Preliminary data suggests that seston characteristics are the most important factors in determining oyster feeding. Clearance rates are lower when there is a higher ratio of inorganic to organic material, though high levels of total particulate matter can suppress clearance rates. Seasonal variation in temperature and salinity is less influential, though effects are confounded by interactions among sites. Ploidy affects energy acquisition strategies and digestive efficiency. Diploids generally demonstrate higher feeding rates though absorption is not different from triploid oysters. Further sampling over a larger geographical area is planned to improve understanding of feeding variability and potentially tease apart the effects of seston characteristics and water parameters such as salinity. This data will be leveraged through machine learning to develop a tool that will rank site suitability for oyster farms.	204A	1:45 PM	2:00 PM
Contrasting responses of juvenile spotted sea trout and southern flounder to environmental stressors	Ronald Baker	Spotted seatrout and Southern flounder are highly important fishery species, and both have declined in Alabama in recent decades. Stock assessments identified factors regulating juvenile survival as critical for stock sustainability. Alabama's coastal waters include valuable nursery habitats of intermixed SAV and emergent marsh, with extensive areas in Mississippi Sound at high salinities, and the Mobile Delta at low salinities. Access to suitable nursery habitat may be regulated by salinity tolerances. We evaluated the salinity tolerance of juveniles of both species through a combination of the analysis of historic state fishery independent monitoring data and a series of laboratory salinity tolerance experiments. The State data suggests strongly contrasting salinity preferences, with the highest catch per unit effort of flounder from 0 ppt and few individuals above 10 ppt, while trout were most commonly captured above 25 ppt with few individuals below 5 ppt. Mesocosm experiments with hatchery-reared juveniles showed that both species could tolerate acute exposure to freshwater, and that juvenile flounder tolerated instantaneous transitions of up to 5 ppt without impacting growth. In 5-9 day chronic experiments, flounder acclimated to near 0 ppt continued to grow strongly with no mortality, while juvenile trout rapidly became lethargic with declines in feeding and growth, and some loss of equilibrium, suggesting that juvenile trout in the wild would not survive exposure to near 0 ppt for more than 2-3 days. Multi-stressor experiments with juvenile trout showed that salinity, temperature, and DO interact with trout acclimated to near 0 ppt, having lower tolerance to high temperatures and low DO. These findings suggest that interannual fluctuations in river flows and future changes in salinity regimes in the region could shift the suitability of extensive areas of nursery habitat in the Delta to favor one species or the other, with subsequent impacts to the stocks.	201B	1:45 PM	2:00 PM

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Title	Speakers	Description	Location	Starts	Ends
Operational Constraints in Near-Real-Time SAR Monitoring of Marine Oil Pollution in the Gulf of America	Juan Velasco	Satellite-based synthetic aperture radar (SAR) is a critical tool for detecting and characterizing marine oil pollution, but its value in time-sensitive operations is limited by two persistent challenges: when a satellite is overhead and how quickly the resulting data is delivered. In the Gulf, where storms, heavy vessel traffic, and extensive offshore infrastructure demand continuous awareness, both factors regularly affect operational timelines. Sentinel-1 offers free coverage but with infrequent revisits and multi-hour delivery delays driven by downlink and processing schedules. Commercial and commercial-like missions can shorten revisit intervals and reduce latency, though their availability depends on tasking opportunities, competing requests, and cost considerations. Together, these constraints determine whether analysts receive imagery within a decision-relevant window and whether observations remain actionable once they arrive. When imagery arrives late, or is not collected at all because no suitable satellite was overhead, analysts must adapt workflows to avoid coverage gaps. Multi-sensor fallbacks are common, with analysts shifting among SAR platforms or incorporating optical data when SAR acquisitions are delayed or missed. Automated preprocessing pipelines reduce the time from download to interpretation by rapidly preparing scenes for analysis and derivative products, while shift dashboards track expected overpasses, pending acquisitions, and the operational impact of delays. Clear shift handoffs ensure that late-arriving scenes are promptly reviewed and incorporated into ongoing assessments, ensuring analysts maintain situational awareness despite acquisition delays. Recent Gulf events underscore the operational consequences of both latency and coverage limitations. Situational awareness degrades when spill assessments rely on stale imagery, and response timelines lengthen when critical decision windows close before data becomes available. This can slow the delivery of analysis products to teams that make decisions about mobilizing aircraft and directing marine assets, and also reduce the accuracy of operational spill models. At the same time, these events also reveal that combining automation, redundancy across multiple sensors, and clear communication between shift personnel can significantly mitigate these impacts. By blending public and commercial data sources, developing tools that anticipate acquisition delays, and designing workflows resilient to gaps in coverage and variability in delivery times, operational units can substantially strengthen the speed and reliability of marine pollution surveillance. These lessons point toward more robust, latency-aware monitoring architectures capable of supporting time-critical decision-making in the Gulf and other operationally demanding regions.	202B	1:45 PM	2:00 PM

Title	Speakers	Description	Location	Starts	Ends
Closing the data gaps in the offshore Gulf: key findings and future of the DEEPEND|RESTORE science program	Tracey Sutton	In 2025, oceanic research in the Gulf marked a significant milestone. The DEEPEND (Deep Pelagic Nekton Dynamics) research consortium completed the first of two 5-year funding phases from the NOAA RESTORE Science Program (NRSP) and its 10th anniversary as a collaborative entity (GoMRI: 2015-2020; NRSP Phase I). Over the past decade, DEEPEND has built the first long-term time-series of deep-pelagic (0-1500 m depth) fish, shrimp, and cephalopod populations in the Gulf. This work has cemented the deep Gulf's standing as a global hotspot of deep-pelagic biodiversity. Faunal analyses have revealed scores of new records and new species in the deep Gulf. Population assessments revealed sharp persistent declines in abundance since 2011. Resource managers report that these trends parallel those in some managed/protected species that are dependent on deep-pelagic prey. Genomic data confirm reductions in genetic diversity among dominant taxa, both corroborating the decline and a consequence of it. Biogeochemical analyses reveal petrogenic contamination in the deep-pelagic fauna, a likely driver, as well as increasing levels of microplastic contamination with depth. Together, these findings indicate that the largest and most remote component of the Gulf ecosystem — the deep-pelagic domain — has indeed been altered by human activity. DEEPEND's work will continue during NRSP Phase II, with faunal and genomic assessments paired with expanded high-resolution bioacoustic and contaminant analyses. New initiatives include the development of a DNA reference library for deep-pelagic animals, the creation of a comprehensive oceanic fish guide with more than 180 new records, and broadened analyses of the distribution of individuals and biomass in the open ocean domain. As always, we welcome in-depth collaboration with stakeholders and resource managers and hope that this work informs Gulf ecosystem use and management.	106B	1:45 PM	2:00 PM
Process-Based Modeling to Support Multi-Objective Metrics for Nature-Based Solutions for MacDill Air Force Base	Ioannis Georgiou	The MacDill Air Force Base (AFB), located on an exposed peninsula at the northern end of Tampa Bay, faces shoreline erosion and flooding challenges that are likely to worsen due to changes in sea levels and the increase in storminess. To combat these challenges, the AFB is exploring the implementation of nature-based solutions (NBS) using beneficial use of dredged material to protect AFB assets and support/enhance the ecosystem and habitat fronting the base. The NBS being considered include restoring the historical longshore bar system, expanding existing submerged shallow shelf habitat, and creating barrier islands. To support the alternatives evaluation, and inform engineering and design, a process-based numerical model was developed, calibrated, and used to simulate representative conditions for the environments around the base. A coupled Delft3D FM hydrodynamic-wave-sediment transport model was developed and calibrated for the Tampa Bay estuary, with a focus on the area near the AFB. The model captures the necessary physical processes to enable the creation of quantitative metrics, supporting a novel approach developed and implemented for this project that follows the principles of Structured Decision Making (SDM). This approach is a transparent and objective-oriented method for identifying actionable alternatives for complex problems involving multiple interested parties or objectives. Specific metrics were developed to support objectives around the physical system. To evaluate which alternatives reduced wave energy at the shoreline fronting the AFB, we assessed cumulative wave energy per unit area across a range of conditions (e.g., tropical and non-tropical, like cold fronts and quiescent periods) throughout the model domain, allowing for a straightforward comparison between alternatives. We simulated tropical storms to quantify flood extent, depth, and duration. For avian habitat metrics, multi-species water depth thresholds were used to identify the monthly spatial extent of suitable avian habitat, including nesting habitat, and non-breeding foraging habitats. Model outputs will be used to inform NBS selection, engineering and design, and permitting. This talk will discuss the development and calibration of the hydrodynamic model, detailing how the model was used to compute specific metrics for the SDM process, as well as the and present modeling and metrics results for selected/refined NBS alternatives.	201C	1:45 PM	2:00 PM

Title	Speakers	Description	Location	Starts	Ends
Multi-scale effects of boat propeller disturbance on seagrass function, structure, and species interactions	Enie Hensel	Seagrasses are vital ecosystems that store nearly 20% of global carbon, support fisheries, enhance water quality, and protect shorelines. Yet, they are rapidly declining worldwide due to climate change and human-driven habitat alteration, including nutrient enrichment and physical damage. Along Florida's Gulf Coast, concern is growing among community members, fishing guides, and land managers about the spread of seagrass damage from boat propeller scars. We introduce SCAR MAPS (Seagrass Conservation through Actionable Research: Management Areas for Prevention of Scarring), a co-production project with one of six objectives is to quantify the ecological impacts of boat scars from 2025–2027. Beginning in April 2025, we combined high-resolution scar mapping with direct field measurements to assess the effects of individual scars, scar density, and their interaction on seagrass function, structure, and bioturbation intensity across multiple spatial scales (e.g., 1 m2, 10,000 m2). Our research spans three focal areas (~30 km apart), each differing in seagrass composition and nutrient availability. In each area, we established nine 1-hectare plots across a gradient of scar density per hectare. At each plot, we are measuring water clarity, sediment organics, seagrass and faunal (fish and epi-benthic invertebrate) community structure, and bioturbator disturbance intensity. Here, we present first-year findings on how propeller scars influence seagrass bed structure, fish and invertebrate community composition, and natural disturbance intensity. Locally, results are shared with end-users and inform actions under FLDEP's 10-year aquatic preserve management plan to prevent and repair propeller scars. More broadly, our study advances applied seagrass ecology by elucidating how meadows respond to propeller scarring under different environmental conditions, improving predictability of scar impacts.	203A	1:45 PM	2:00 PM
Colonial Waterbird Nest Survival Across the Texas Coast	Rostam Mirzadi	Rostam E. Mirzadi1, David A. Essian1, Liam G. Wolff1, Dale E. Gawlik1 Harte Research Institute, Texas A&M University-Corpus Christi, 6300 Ocean Dr, Corpus Christi, Texas, USA. Effective management of coastal waterbird populations requires integrating scientific research aimed at addressing uncertainties with on-the-ground management decisions. Along the Texas coast, islands provide breeding habitat for >26 species of colonially nesting waterbirds, including 4 species of special management concern; however, factors affecting nest survival and productivity are largely unknown. During the 2022–2025 breeding seasons, we collaborated with land managers to monitor 3,348 nests of five colonial waterbird species at 26 breeding colonies using a quadcopter drone to determine which factors affect nest survival and productivity. Using logistic exposure models, we found that Tricolored Heron (Egretta tricolor) had the greatest overall survival (mean, 95% CI, n) (85.4%, 83.0–87.4%, 547 nests), followed by Caspian Tern (Hydroprogne caspia, 82.8%, 79.8–85.4%, 477 nests), Great Egret (Ardea alba, 81.4%, 78.6–83.9%, 587 nests), Reddish Egret (Egretta rufescens, 74.5%, 70.4–78.1%, 358 nests), and Black Skimmer (Rynchops niger, 56.4%, 54.2–58.5%, 1,380 nests). Parameters affecting nest survival varied among species, but nest age, timing, and colony density affected most species. Older nests had higher survival for Great Egret, Reddish Egret, Black Skimmer, and Caspian Tern. Early nest initiation was associated with higher survival for Great Egret, Tricolored Heron, and Caspian Tern. High colony density increased survival for Reddish Egret and Caspian Tern. These results provide a baseline understanding of breeding biology and, through collaboration with managers, support targeted conservation actions and prioritization of colony islands for rehabilitation.	201A	1:45 PM	2:00 PM

Tuesday May 5, 2026

Title	Speakers	Description	Location	Starts	Ends
A Watershed Event (AWE) Empowering Youth through Place Based Education: Lessons for Broadening Participation by Building on Successful Programs	Ellen Granger	Science education research shows that to understand scientific concepts deeply, learners must engage in sense making about them. Thus, instruction needs to shift from a goal of "learning about" to one of "figuring out" science concepts. This project was designed to embody this by providing science experiences wherein students figure out concepts that connect to waterbodies where they live. Due to its success, it is now being broadened into an experience to engage adults in marine environmental education. We built on an existing one-day, marine field-trip program for middle-schoolers by designing, testing, revising, and evaluating a coastal ecosystem unit where students engage in interactive science experiences situated in their communities through a Design-Based Research approach. The resulting curriculum, A Watershed Experience (AWE), incorporates strong informal and formal science learning experiences. Classroom teachers were supported to employ "ambitious science teaching," shifting from a more traditional concept presentation by teachers to the vision of science learning where instructors are facilitators of student sense-making. To accomplish this shift, we also developed a professional development institute wherein teachers first experience the AWE curriculum as learners, then unpack the pedagogy that underpins it. With our support, they implemented it in their classrooms and engaged their students in informal science experiences at our coastal marine lab. The program evaluation and the reaction of its teachers to their own learning experiences at the coast was so positive, that we used it as the foundation for a new adult program for the public. We pilot tested the adult coastal eco-experience and the demand for this type of place-based learning has so surprised us that we are expanding access to it. We will share findings and lessons learned from the original project funded by NASEM (20+ teachers & 600 students) and the new adult program.	203B	1:45 PM	2:00 PM
Panel Discussion: Integrating Artificial Intelligence into Real-world Water and Flood Management	Angelina Freeman	Panel discussion for the Integrating Artificial Intelligence with Data and Modeling for Water Resource Management session. Panelists include presenters from the session. Discussion will center on integrating artifical intelligence into real-world water and flood management.	204B	2:00 PM	2:30 PM
Propeller Scarring of Seagrass in the Nature Coast Aquatic Preserve: Exploring AI detection and mapping methods to inform managers.	Mark Clark	Propeller scarring of seagrass is a common occurrence in shallow coastal systems and is a challenge for managers to quantitatively assess at scale. Multiple platforms exist to acquire imagery, but detecting and classifying scarring in images can be tedious and often resource prohibitive. The 455,000-acre Nature Coast Aquatic Preserve along Florida's west coast, is one such system. To facilitate managers' needs to map and quantify propeller scarring in this region, three sources of aerial imagery: drone, manned aircraft, and satellite were collected, and two detection and classification approaches: manual tracing and a computer vision/AI model were evaluated. At scale, drone imagery provided the highest resolution and the most detailed scar detection, but limited windows of favorable flight conditions made full-scale coverage impractical. Manned-aircraft imagery offered broad spatial coverage with good resolution but would be cost-prohibitive for frequent monitoring. Higher-resolution satellite imagery (0.3–0.5 m/pixel) showed strong potential as the most economical option for routine assessments. In the past, detection and classification of imagery was conducted manually, which is time consuming, somewhat subjective, and if multiple analysts are involved increases variability in scar identification. To increase objectivity and streamline the process, an AI model was trained and applied to the three image sources and compared to manual classification. Model results were often equal to and in some instances, superior to, manual classification. In addition, model output is probabilistic at the pixel scale allowing the user to apply a level of confidence to the model output, whereas manual classification is binomial (scar or no scar). The model is still being refined but could dramatically shorten the time and cost to post process imagery for the detection of propeller scarring, significantly improving scar mapping and monitoring for managers.	203A	2:00 PM	2:15 PM

Tuesday May 5, 2026

Title	Speakers	Description	Location	Starts	Ends
Developing Louisiana's 2029 Coastal Master Plan	Ashley Cobb	The Louisiana Coastal Protection and Restoration Authority (CPRA) is the single state entity with authority to articulate a clear statement of priorities to achieve comprehensive coastal protection for Louisiana. CPRA is mandated to update the state's Coastal Master Plan every six years, with the next iteration due in 2029. As coastal Louisiana responds to increasing threats from flooding and sea level rise, the 2029 Coastal Master Plan aims to build on past master plans to improve the effectiveness and efficiency of projects in terms of their ability to build or maintain land and reduce storm surge-based flood risk. In order to achieve these goals, the 2029 plan is focusing on how to enable the plan to better support implementation of projects after the plan is approved by the Legislature and ensuring the plan process is more transparent. The Master Plan Team is working to provide updated planning products that are more accessible to the public, especially other practitioners. In the face of continued coastal land loss, increasing flood risk, and limited resources it is important for the 2029 Coastal Master Plan to serve as an actionable guide for the state's coastal restoration and protection efforts while providing information about the various benefits and impacts of projects.	202A	2:00 PM	2:15 PM
Modeling of Larval Dispersal, Survival and Population Connectivity of Greater Amberjack in Terms of Pelagic Habitats	Zhixuan Song	Greater amberjack Seriola dumerili is a highly migratory, reef-associated fish species that has been heavily exploited in the Gulf of Mexico. Stock rebuilding and sustainable management are often compromised by a lack of information on dispersal pathways, ecological connectivity, and source-sink dynamics. To fill out the knowledge gap we have developed and applied biophysical modeling to examine physical, biological, and ecological processes influencing the dispersal and connectivity of larval amberjack, aiming to support optimal assessment and management of the species. In this presentation we will explore how larval behaviors and oceanographic conditions affect population connectivity and larval dispersal within the Flower Garden Banks National Marine Sanctuary (FGBNMS) and across the Gulf. We further test a hypothesis that early life survival of the species could be affected by utilizing Sargassum mats as transitional nursery habitats during early life. Findings on spatial patterns of dispersal and the modifications on population connectivity in the Gulf due to associations with Sargassum habitat contribute to efforts in mitigating exploitation impacts and identifying critical nursery habitats for this valuable fisheries resource.	201B	2:00 PM	2:15 PM
Remote Pilot Training for Oil Spill Response	Bryan Thom	The US Coast Guard is often one of the first emergency responders to an oil spill. With a growing fleet of small Uncrewed Aircraft Systems (sUAS), oil spill response is an important mission within the USCG. The remote sensing capabilities sUAS can bring to a response greatly enhance safety, streamline data collection, and provide important documentation of impacts to the environment. With that in mind, the USCG Great Lakes Oil Spill Center of Expertise (GLCOE) funded two workshops in partnership with NOAA to help develop training material and skills with a single cadre of pilots. The first workshop held in St. Ignace, Michigan, was meant to expose the pilots to flying in the cold while also building a solid foundation with the Skydio X10D, the newest USCG sUAS platform. Pilots also learned about oil spill response, Shoreline Cleanup Assessment Technique (SCAT) and how UAS can be utilized, as well as data management and sharing using NOAA's Data Integration Visualization Exploration and Reporting (DIVER). The second workshop was held in Santa Barbara, CA. This workshop was more hands on and included simulated SCAT on a beach and operating from a USCG cutter while underway in order to capture oil on open water coming from natural seeps. Throughout both workshops, training materials were created, pilots were surveyed based on knowledge learned, and USCG Short-Range UAS policy was revised by the sUAS training division, including the adjustment of the underway checklist for the X10D platform's launch and retrieval, mitigating risks and ensuring success. The USCG pilots involved came from various units and districts, and the skills they learned are applicable to any geographical location. They will be able to take their lessons learned and help train other sUAS pilots at their home units. Collaborating with and including the sUAS division as well as Marine Environmental Response personnel ensured that further training and policy could be enhanced by these workshops.	202B	2:00 PM	2:15 PM

Title	Speakers	Description	Location	Starts	Ends
Advancing Water Literacy among K-8 Children in Southeast Louisiana through the "Living with Water" Program	Stephanie Aubert	With support from the National Academies of Sciences, Engineering, and Mathematics Gulf Research Program, the Louisiana Children's Museum has offered the "Living with Water program in the museum, in the classroom, and throughout the greater New Orleans community. Living with Water is a place-based environmental education program designed to supplement traditional K-8 classroom learning by engaging children in hands-on activities that build water and environmental literacy skills as an important first step to becoming problem-solvers for future environmental needs. Living with Water learning is based in Southeast Louisiana, specifically in Orleans and Jefferson Parish K-5 schools and at LCM's state-of-the-art sustainable facility and expansive indoor/outdoor campus in New Orleans City Park. Living with Water includes three components: 1) classroom experiences for grades K - 5, 2) A summer camp for grades 6 - 8 and 3) museum programming for grades K-8. Currently, the Living with Water classroom curriculum is designed for and engages third-grade students; with GRP funding, LCM will adapt the curriculum for children in grades K-5 and expand implementation to K-5 classrooms. As a part of the Place-Based Education in the Gulf session, the Living with Water team would like to share our favorite successes, lessons learned, and how we hope to scale the program and create materials to support Gulf Coast educators inside and outside of the classroom.	203B	2:00 PM	2:15 PM
Food Size and Quality Over Oyster Reefs in the Western Mississippi Sound	Ethan Mocny	Oysters have experienced severe declines from overharvesting, disease, and environmental degradation. For the successful renewal of populations, oyster larvae require suitable water parameters and a well-balanced, but lipid-rich diet. Water samples were taken and environmental data measured over six historically abundant and present oyster reefs in the Western Mississippi Sound during the 2024 spawning season. The water samples were analyzed for seston food quality in terms of total lipids, proteins, and carbohydrates. The seston was also size-fractionated, with measures of lipid, protein, and carbohydrate obtained for a series of size divisions set at 20, 10, 5, and 2 µm. Water temperature peaked in late August, at 31 °C, and then declined through October. Salinity remained low, 2.93 to 8.14‰, until late June, then quickly increased to a maximum of 25‰ in late August, declining thereafter. Dissolved oxygen remained high, 5 to 9 mg/L, with the lowest values in the summer months. Particulate matter and particulate organic matter followed a similar pattern, spiking in late June and early August. Protein concentrations remain around 1-2 mg/L except in late June when concentrations dramatically increased, shadowing the first spike in particulate organic matter. Carbohydrate concentration increased through the summer, peaking in August at over 1 mg/L, at the same time as the second peak in particulate matter. Lipid concentration was generally high from May to June, then declined sharply in the following months. Understanding how food quality fluctuates spatially and temporally has critical implications for larval success. The environmental data and food quality parameters will be input into a larval performance model to estimate the influence of food quality available during the 2024 spawning season on larval survival; comparison will be made between model predictions and the observed timing and intensity of larval settlement on the reefs.	204A	2:00 PM	2:15 PM

Title	Speakers	Description	Location	Starts	Ends
Collaborative Decision-Making for Rookery Island Restoration in Texas	Diana Del Angel	The Colony Island Network Design and Implementation (CINDI) project emerged within a complex restoration funding and decision-making landscape along the Texas coast, where multiple agencies and initiatives intersect to support habitat restoration and resilience. Particularly, the Texas Coastal Resiliency Master Plan (TCRMP) is a stakeholder-driven framework that guides the state's coastal restoration and protection efforts by identifying priority projects and strategies to enhance the resilience of natural and human communities along the Texas coast. The CINDI project supports these statewide efforts by developing a co-produced colony island restoration prioritization tool designed to inform and align with the goals of the TCRMP. The CINDI project adopted a co-production framework to ensure that research, modeling, and management decisions evolve collaboratively and address the needs of various restoration efforts. The team's organizational structure emphasizes the unique role of the Advisory Group as defined in the CINDI Team Charter—serving as both a bridge to end users and a feedback mechanism to align project outputs with real-world decision contexts. The team's Project Concept Model serves as a roadmap for co-production, guiding both process assessment and the development of evaluation tools. Engagement mechanisms supporting this collaborative process include shared digital workspaces, a website and public list-serv, regular meetings, the concept model itself, publication guidance, a communication plan, and a co-production evaluation plan. Preliminary results from the co-production assessment reveal strong satisfaction among participants regarding transparency and inclusivity. Further, any challenges are reported to help the team adjust and adapt the engagement process. Ongoing work and future work are expanding the reach of engagement. Lessons learned from this process contribute to advancing best practices for integrating science, policy, and management through co-production in large, interdisciplinary coastal projects.	201A	2:00 PM	2:15 PM
Before You Begin: Considerations for Message Preparation	David Garraway	Before you begin to promote your message, you must take the time to understand what your message is and to whom it is intended. This presentation will provide a process for determining your message's audience and positioning messaging to meet your audience where they are.	106A	2:00 PM	2:15 PM
Organic pollutants in deep-pelagic shrimp eggs: maternal transfer or direct environmental exposure?	Isabel Romero	Observations over the past decade in the Gulf indicate severe population declines among deep-sea decapod crustaceans. As the Gulf functions as a sink for numerous natural and anthropogenic organic contaminants (e.g., petroleum seeps, oil spills, riverine inputs, and runoff), and because early life stages exhibit greater toxicological sensitivity to pollutants than adults, understanding exposure pathways during egg development is essential for assessing the resilience of deep-pelagic ecosystems. This study compares chemical data between adult female shrimps and their carried eggs (Families Acanthephyridae: Acanthephyra purpurea and A. stylorostrata, and Oplophoridae: Debaspis debilis) collected between 2011 and 2023, to elucidate the relative roles of maternal transfer and environmental exposure in driving the bioaccumulation of persistent organic pollutants (e.g., polycyclic aromatic hydrocarbons, phthalates) in deep-sea shrimp eggs. Preliminary results indicate higher concentrations of nearly all analyzed compounds in egg samples compared to muscle tissue samples from adults, suggesting a potential risk of increased mortality during early developmental stages. This pattern is particularly pronounced in S. debilis, which exhibited threefold higher PAH concentrations, and in the genus Acanthephyra, which showed twofold higher phthalate levels. Across all years and species studied, maternal transfer of organic pollutants to offspring was the predominant process, except for S. debilis in 2022–2023, where naphthalene compounds appeared to derive primarily from environmental exposure. Overall, the results indicate a shift in pollutant sources (from anthropogenic to natural for PAHs) and reveal multiple exposure mechanisms that may influence the abundance of deep-pelagic shrimps in the Gulf.	106B	2:00 PM	2:15 PM

Title	Speakers	Description	Location	Starts	Ends
Synthesizing Restoration Outcomes for Marine Resources Across Multiple Scales	Melissa Carle	Over the past 15 years, the Deepwater Horizon (DWH) Trustees have invested $3.28 billion in a diverse portfolio of large-scale restoration actions across the Gulf of America region. This portfolio includes extensive coastal habitat restoration efforts in all five Gulf states; nutrient reduction and other water quality improvements; collaborative efforts with Gulf fishermen to reduce unintentional mortality to non-target fish and other marine species; marine debris removal; and the expansion of sea turtle and marine mammal stranding networks and emergency response capacity, among other restoration approaches. To fully assess the impact these restoration actions are having on the marine resources and ecosystems damaged by the spill, NOAA is synthesizing relevant ecological information across multiple spatial and temporal scales. Synthesis efforts focus on two main questions: 1) How has habitat restoration helped restore injured fish and invertebrate species? and 2) How have restoration projects reduced the level of risk that major stressors and threats pose to marine resources injured by the DWH oil spill? To address these questions, monitoring data collected for individual restoration projects is being synthesized along with new regional and Gulf-wide monitoring data collection efforts initiated by the Trustees, data from other Gulf science programs, and previously existing regional monitoring datasets. NOAA's synthesis efforts incorporate a range of analytical approaches, including meta-analysis, food web analysis, quantitative models, spatial analysis, and expert elicitation. This multi-faceted approach will build the multiple lines of evidence necessary to understand long-term restoration outcomes against the background noise of a busy and ever-changing Gulf, helping us demonstrate the impact of the restoration investments and informing future restoration and marine resource management.	201D	2:00 PM	2:15 PM
An Integrated Science Framework for Collaborative Restoration Planning at the Chandeleur Islands	Martijn Bregman	A large-scale effort is underway to restore 13 miles of the Chandeleur Islands, and to improve long-term resiliency of the barrier island chain. The effort is co-led by the Louisiana Coastal Protection and Restoration Authority (CPRA), U.S. Fish and Wildlife Service (USFWS), and Louisiana Department of Wildlife and Fisheries (LDWF). A key goal is to restore and enhance seagrass meadows, however, uncertainties remain regarding the current distribution of seagrass and how that may change under proposed restoration projects. Decision-makers from USFWS, LDWF, and NOAA, together with the CPRA project manager and Breton National Wildlife Refuge resource manager, are collaborating with researchers from the University of Southern Mississippi, The Water Institute, and The University of Florida, to co-develop research that informs restoration design and adaptive management. This presentation introduces an interdisciplinary framework that combines field observations, remote sensing, and numerical modeling to analyze seagrass dynamics at the Chandeleur Islands in support of restoration planning. The remote sensing component uses a deep learning model developed for this study, trained with field data to map seagrass extent and density from satellite imagery. Results are validated against historical maps, field observations, and aerial imagery. By mapping seagrass extent across multiple years, this approach allows evaluation of long-term trends as well as the impacts of individual tropical cyclones. The numerical modeling component uses a Delft3D FM coupled flow-wave model that explicitly represents the effects of seagrass on currents, waves, and sediment transport. The spatial extent of seagrass meadows in the model is based on the remote sensing-derived maps. By linking model results with remote sensing data, the study provides new insight into spatial and temporal changes in seagrass and the main factors influencing its survival.	201C	2:00 PM	2:15 PM

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Title	Speakers	Description	Location	Starts	Ends
The Mississippi Delta Nature and Learning Center, Greenville, Mississippi, a Place of Discovery, and Learning for pre-K-12 Students	Nina Baghai-Riding	The Mississippi Delta Nature and Learning Center (MDNLC), located in Greenville, MS, consists of twenty-six acres. It is comprised of wooded areas, grasslands, and ephemeral wetlands that are representative of the Mississippi Delta bottomland hardwood forest. The purpose of the MDNLC is to target pre-K-12 grade students that live in the Mississippi Delta. It bridges a gap that connects children and youth to the natural environment and environmental issues. Children become engaged with the outdoor environment, acquire skill sets, and participate in project-based learning activities. Educational programs incorporate urban, rural, and agricultural awareness, local food webs, ecosystems, water mindfulness, air quality, pollution, and more. Each lesson highlights a science standard that is relevant to the Mississippi Delta: A is for alligators, P is for pollination, M is for minerals, and so forth. Each program typically lasts for 45 minutes and targets a certain grade level. The staff integrates art, history, environmental, biological, and social sciences, literacy, mathematics, and other academic disciplines into lessons. The staff also incorporates engaging activities, stories, discussion questions, scientific words and methodologies, nature walks, creating journals, and pre-and-post learning questions to measure the effectiveness of lessons. Directors and staff at the MDNLC are environmental stewards and the center is making a positive impact. In some instances, participants had an 87% increase in knowledge of the natural world based on pre-and post-test scores. The center has served approximately 3500 children and youth since beginning programming in 2023. These participants have gained confidence in exploring the natural world using tools and resources that MDNLC provides. Additionally, the MDNLC website contains information about upcoming programs, local sponsors, hours of operation, family events, and more.	203B	2:15 PM	2:30 PM
Insufficient fundamental research limiting successful restoration of oyster fisheries	Hui Liu	A recent dramatic decline in oyster reefs has drawn considerable public attention to the societal issues on conservation and restoration of oyster fisheries. So far, most efforts have primarily targeted their benthic phase leaving the pelagic oyster larvae largely elusive. While research on modeling and data collection has improved our understanding of some strategies for enhancing oyster production, uncertainties still exist regarding the appropriateness of model application and overlooked pelagic oyster larvae in relevant studies. Recently we have conducted integrated research through developing a population model assisted by field surveys targeting the overlooked pelagic oyster larvae. This talk will illustrate a mechanistic population model of pelagic oyster larvae, introduce a long-term monitoring program of oyster larvae and environmental factors in Galveston Bay, Texas, then display the research for informing resource managers on the strategic placement of oyster sanctuaries and the effectiveness of restoration and management efforts for this economically and ecologically important marine living resources.	204A	2:15 PM	2:30 PM

Title	Speakers	Description	Location	Starts	Ends
Utilizing Existing Monitoring Data to Characterize Coastal Restoration Effects on Inshore, Nearshore, and Offshore Ecological Condition	Erin Reschke	Estuaries in the Gulf of America (GOA) support important commercial and recreational fisheries. Many species spend a portion of their life history in these systems, while others may rely on estuaries indirectly through trophic linkages to organisms that move between estuarine and open ocean environments. Several fish and water column invertebrate (FWCI) species with estuarine dependency were identified as priorities for restoration in the Deepwater Horizon Natural Resource Damage Assessment and Restoration (DWH NRDA), Open Ocean Trustee Implementation Group's Fish and Water Column Invertebrates Strategic Plan. The Coastal Restoration Effects on Inshore, Nearshore, And Offshore Ecological Condition Monitoring and Adaptive Management Activity Implementation Plan (MAIP) leverages U.S. EPA's National Coastal Condition Assessment (NCCA) protocols and fisheries population and food web evaluation protocols to develop a framework to evaluate the ecological effects of the DWH NRDA restoration activities on condition of estuarine ecosystems. The NCCA collects data on water quality, sediment, benthic macroinvertebrates, algal toxins, and whole fish contaminants. The MAIP outlined a process to select a GOA estuary for a pilot study (presence of DWH NRDA projects, historical water quality data and historical fisheries data) and identified Mobile Bay. During the summer of 2025, MAIP implementation began by collecting field samples and data using NCCA protocols. The data will be used to evaluate the ecological effects of DWH NRDA Nutrient Reduction, Water Quality, and Wetland, Coastal and Nearshore Habitat restoration activities in the system. Additional pilot study implementation activities include the creation of a baseline through the assimilation of existing pre-restoration data, use of NCCA protocols co-located with fish sampling protocols, and analysis of differences in water quality, habitat availability/quality, and FWCI populations between pre- and post-restoration. This presentation will provide an outline of the MAIP approach from the selection of the pilot study location through implementation.	201D	2:15 PM	2:30 PM
Integrating Habitat Needs into Large-Scale Coastal Restoration: A Co-Produced Guidance Document for Adaptive Management of Louisiana's Coastal Birds	Jessica Henkel	The 2010 Deepwater Horizon (DWH) oil spill caused widespread injury and mortality to coastal birds in Louisiana, and ongoing habitat loss remains a significant limiting factor in successful nesting. Large-scale ecosystem restoration funded by DWH settlement dollars is helping address this loss. To further support bird restoration efforts, the Avian Guidance Document (Guidance for Coastal Ecosystem Restoration and Monitoring to Create or Improve Bird-Nesting Habitat, 2023) was developed to maximize benefits for coastal breeding birds while advancing broader habitat restoration goals of natural resource managers. Co-produced by avian experts, engineers, and coastal restoration practitioners, the Guidance Document emphasizes species that nest on the northern Gulf and provides clear, actionable recommendations for restoration project teams. It highlights habitat features known to be important for nesting birds and within designers' control (e.g.; elevation heterogeneity, land to water interspersion, hydrological features) that project teams can incorporate into existing restoration design plans to leverage additional benefits for nesting birds. The Avian Guidance Document was created as a living document to be updated at least every five years. The most recent update in 2025 significantly expanded recommendations for Marsh-nesting birds and added a new section with targeted guidance for Black Rails. We will discuss the iterative co-production process, highlights of the new Marsh-nesting bird recommendations, and the Avian Guidance Document's role in Louisiana's broader adaptive management framework.	201A	2:15 PM	2:30 PM

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Title	Speakers	Description	Location	Starts	Ends
Bringing Weeks Bay to Life: An Interactive StoryMap for Estuarine Education	Dixie Cartwright	Estuaries, where freshwater and saltwater meet, are among the most productive ecosystems on Earth, providing vital habitat, supporting fisheries, and offering natural protection from storms. Yet public understanding of these environments remains limited due to restricted access and awareness. Traditional outreach, while effective, is often hindered by distance, time, and resource constraints. To help address these challenges, this project develops an immersive story map focused on the Weeks Bay National Estuarine Research Reserve (NERR) in Alabama. Established in 1986, Weeks Bay encompasses more than 6,000 acres of tidal wetlands, forests, pitcher plant bogs, and submerged aquatic vegetation. As a center for research, education, and stewardship, it provides an ideal setting for innovative virtual outreach. The story map combines 360-degree video, interactive maps, and multimedia elements to create a virtual exploration of Weeks Bay's habitats and scientific work. This format allows users to experience estuarine environments remotely, learn about ongoing monitoring and research, and better understand the ecological value of estuaries. By increasing accessibility and engagement, the project aims to strengthen scientific literacy and foster a sense of connection that supports conservation. Drawing on research showing that immersive tools enhance environmental learning and retention, this project also provides a model that can be adapted for other sites within the National Estuarine Research Reserve System. In this presentation, we will describe the design of the Weeks Bay story map, share early insights into user engagement, and discuss its broader potential for environmental education and outreach. Through this approach, we seek to bridge the gap between estuarine ecosystems and the communities that depend on them, promoting informed stewardship and long-term sustainability.	106A	2:15 PM	2:30 PM
BSEE Remote Sensing Research Program for Oil Spill Response	Jay Cho	Bureau of Safety and Environmental Enforcement (BSEE) manages a comprehensive, long-term research program dedicated to improving spill response countermeasures for oil spills in offshore environments, including the Arctic. BSEE Research Scientists and Engineers perform the full spectrum of R&D (basic, applied, and developmental research) to advance the detection, containment, and cleanup of oil spills that may occur from offshore facilities. Specific research emphasized includes mechanical containment and recovery, remote sensing, in-situ burning, chemical treatments such as dispersants and herders, and incident management team decision-making tools. The Oil Spill Preparedness Division (OSPD)'s Oil Spill Response Research (OSRR) program is a cooperative effort bringing together funding and expertise from research partners in government agencies, industry, academia, and the international community. The OSRR program coordinates research efforts between organizations and disseminates findings and recommendations through a variety of internal, public, and international forums, such as formal committees, workshops, conferences, publications, and the Internet. This presentation will provide an overview of BSEE's oil spill response research program and highlight several remote sensing research efforts including aerial and underwater remote sensing technology for oil spill detection and thickness measurement.	202B	2:15 PM	2:30 PM

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Title	Speakers	Description	Location	Starts	Ends
Post Disaster Planning in Florida's regulatory environment	Diane Quigley	During the 2024 hurricane season, the Tampa Bay area was hit by back to back storms causing billions in public and private property damages. Utilizing FEMA funds the City of Tampa and surrounding counties (Hillsborough, Pinellas and Hernando) developed both individual PDRPs, as well as a combined regional PDRP. These PDRPs serve as a single-source reference to guide action and decision-making throughout the long-term disaster recovery period while providing a strategic roadmap for how local and county governments will recover and rebuild in the months and years after a major disaster. Developed through collaborative and inclusive public and stakeholder engagement processes, these Plans bridge the gap between immediate recovery actions and long-term reconstruction, supporting decisions that will shape housing, infrastructure, economy, and environment in the years following a major disaster. The final Plans include an evaluation of vulnerabilities under a worst-case hurricane scenario and other natural hazards. It analyzes each communities operational and regulatory capacity to build on existing frameworks and implementation of recommendations. Recognizing that long-term recovery and redevelopment is also a financial challenge, the PDRPs integrate findings from a detailed financial planning analysis and recommended actions to strengthen each community's financial readiness. The local and regional PDRPs result in actionable redevelopment and building strategies, organized into seven core topic areas structured around national emergency Recovery Support Functions. These actions are prioritized for implementation and integration into each agency's programs and policies. Addressing the political landscape was the greatest challenge. Balancing the needs and desires of each community in long-term recovery while navigating the state's intentions of prohibiting higher redevelopment standards, allowing individuals to rebuild their properties as they were and reducing the cost of redevelopment, was key to ensuring acceptance and implementation of the recommended actions.	202A	2:15 PM	2:30 PM
Integrating multiple data streams to inform seagrass management actions in Florida's Nature Coast	Savanna Barry	Florida's Nature Coast supports one of the Gulf's largest seagrass meadows and is a popular destination for fishing and boating. However, propeller scarring poses a growing threat to these seagrass beds. The SCAR MAPS (Seagrass Conservation through Actionable Research: Management Areas for the Prevention of Scarring) project investigates spatial management strategies to mitigate this impact. One potential solution is the implementation of seagrass management zones, such as pole and troll areas. To inform this approach, we conducted 18 semi-structured interviews with managers, law enforcement, and other end-users involved in similar efforts across Florida. We also completed multiple site visits to established pole and troll zones to observe design, enforcement, and community engagement practices. A literature review characterizes research findings and recommendations related to seagrass damage caused by recreational boating worldwide. Analysis of interview transcripts revealed consistent priorities: the need for robust data, transparent processes, and inclusive end-user engagement. Site observations highlighted practical considerations for signage, access, and compliance. Together, these insights will inform decisions and end-user engagement processes for seagrass management zones in Florida's Nature Coast. This integrated approach can enhance conservation outcomes while maintaining recreational access, ensuring the resilience of these vital ecosystems for future generations.	203A	2:15 PM	2:30 PM

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Title	Speakers	Description	Location	Starts	Ends
Estimating the Carbon Flux of a deep-sea Hatchetfish Within the Gulf	Sidney Trimble	Human impacts have led to increased levels of anthropogenic carbon within the atmosphere and the world's oceans. The Biological Carbon Pump (BCP) plays a key role in reducing the amount of carbon in the atmosphere by aiding in the export and sequestration of carbon via carbon exchange between the atmosphere and the upper ocean followed by transfer into the deep sea. Mesopelagic fishes aid in this process of carbon transfer, and their influence can be analyzed through carbon flux models. Hatchetfishes are one of the most abundant fishes in the world with some species exhibiting diel vertical migration, but their role in the BCP has not been specifically studied. This study used individual-based carbon flux models based on the deep-sea hatchetfish Argyropelecus aculeatus to analyze the daily activities of individuals and estimate the carbon flux of these fishes. Individuals were categorized as either a migrator or non-migrator based on standard length. Previous diet studies have shown migratory prey present in the diet of non-migrating A. aculeatus which allows these individuals to contribute to the removal of anthropogenic carbon without migrating themselves. Utilizing these individual models, we were able to examine their potential contributions to the BCP within the Gulf. The results show that carbon flux estimates ranged between 2.18 1 mg C d-1 for non-migrants and 5.64 – 6.41 1 mg C d-1 for migrants, which is similar to lanternfish estimates using similar models. The two pathways contributing most to a total 24-hr carbon flux were the respiration and growth, and mortality pathways for both migrating and non-migrating A. aculeatus, both of which are quite poorly constrained for mesopelagic species.	106B	2:15 PM	2:30 PM
The Perdido Watershed Initiative: Integrating Innovative Approaches to Achieve Restoration at the Watershed Scale	Katie Baltzer	The Nature Conservancy's Perdido Watershed Initiative has been working across boundaries since 2022 to integrate a suite of on-the-ground restoration efforts, develop a living shoreline suitability model, perform shoreline assessments, prioritize NBS projects through Scaling Up Nature Based Solutions (SUNS), and conduct extensive outreach using partner networks across Alabama and Florida. We will discuss work to date and highlight innovative approaches in design and implementation including seagrass transplanting, combining stormwater and coastal designs for shore-based access features, and partnering with graduate and undergraduate students to develop restoration designs for shoreline protection while building job skills. We will also discuss challenges of managing a multi-component project across jurisdictional boundaries and balancing the economic needs of tourism and development with conservation needs. By leveraging our existing networks to establish new connections and solutions, we have been able to incorporate a holistic approach to protecting critical coastal habitats and ecosystem services that communities throughout the Perdido Watershed rely on.	201C	2:15 PM	2:30 PM

Title	Speakers	Description	Location	Starts	Ends
What can we infer from interspecific synchrony of reef fishes in the eastern Gulf of America?	Justin Lewis	One of the more salient management challenges surrounding fisheries in the Gulf of America (Gulf) is how to more directly incorporate ecosystem effects into stock assessments. The main impediment to progress on this front is not analytical however; it is empirical. In many cases, observational times series are of insufficient length and resolution to identify and quantify the relative influences of drivers of population dynamics at appropriate scales. Filling this gap in data availability is a primary goal of the Gulf Fishery Independent Survey of Habitat and Ecosystem Resources (G-FISHER) program, which is a multi-agency underwater video survey that collects data Gulf-wide on reef fish distribution, abundance, and size composition, as well as habitat coverage and composition in a standardized manner. Using data collected under G-FISHER and its survey predecessors, we created an 18-year time series of reef fish abundance indices (n=20) in the eastern Gulf to be analyzed via state-spaced dynamic factor analysis (DFA). Dynamic factor analysis is a dimensional reduction technique for time series that can be used to identify common population trends amongst species as well as the potential impact of environmental drivers on these trends. Of the DFA models considered, those that best fit the data included two and three shared trends. When we the influence of El Niño–Southern Oscillation, North Atlantic Oscillation and red tide occurrence were also considered, there were no appreciable improvements to model fits. As several of the species assessed here initially recruit to estuarine systems, particularly in the eastern Gulf, our eventual goal is to use these results to inform the development of species-specific state-space models to assess potential linkages between inshore trends in recruitment to offshore abundances. Overall, the DFA proved useful for examining population trends amongst both similar and disparate species while also providing an avenue for examining the impacts of global environmental drivers.	201B	2:15 PM	2:30 PM
Long term Management for FL's seagrass - Joint Round table discussion	Rebecca Prado	Seagrass meadows are foundational to Gulf ecosystem health, supporting biodiversity, stabilizing sediments, improving water quality, and providing critical nursery habitat for commercially and ecologically important species. Yet, these habitats face mounting threats from storm impacts, declining water quality, and anthropogenic disturbances such as boat propeller scarring. Many state and federal agencies throughout Gulf are interested in and need up-to-date data and maps of seagrass resources. The SAV Community of Practice has been active many years in the Gulf region to help share such information, resources, and data. Updates to current and ongoing initiatives will be presented during this session. These initiatives include, but are not limited to (1) Florida seagrass restoration efforts as part of the development of a Florida Seagrass Restoration Plan under the Seagrass Restoration Technology Development Initiative (F.S. 403.9334); (2) interdisciplinary projects to explore innovative approaches to seagrass protection, restoration, and management, specifically the ChIRPS (Chandeleur Islands Restoration Project for Seagrasses) and SCAR MAPS (Seagrass Conservation through Actionable Research – Management Areas for the Prevention of Scarring); and (3) work on revisions for a new Seagrass Status and Trends report with a target release date of 2030. Presentations on the current and completed progress towards these initiatives are invited to present.	203A	2:30 PM	3:00 PM

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Title	Speakers	Description	Location	Starts	Ends
Advancing the Implementation of Coastal Restoration in Louisiana through a co-produced and Adaptive Science Framework	Gretchen Vanicor	Coastal Louisiana faces complex challenges from the compounding effects of coastal land loss and sea-level rise. The State of Louisiana's Coastal Protection and Restoration Authority (CPRA) and the RESTORE Act Center of Excellence for Louisiana (LA-COE) have adopted a co-production of science framework to help ensure that scientific research funded through the LA-COE supports the research needs of CPRA and the Louisiana Coastal Master Plan (CMP), a large-scale coastal restoration plan that outlines activities needed to restore and protect Louisiana's coast. In this presentation, we will describe the co-production of science framework established between the LA-COE, CPRA, and research projects funded by the LA-COE. Through an iterative process, the Louisiana CMP is revised every six years with improved model and scientific information. The LA-COE leverages the cyclical nature of the CMP by working with CPRA to identify updated research needs for each Request for Proposals solicited by the LA-COE. As highlighted in the 2026 LA-COE 10-Year Impact Report, the LA-COE funding process is structured to promote the production of actionable science that can be synthesized to inform restoration planning and implementation. Once funded, multiple mechanisms are also in place during the research cycle to support data sharing, synthesis and collaboration between researchers and CPRA staff. We will highlight these mechanisms and provide examples of LA-COE-funded projects where research results have been used to inform the CMP and its implementation. Finally, we will highlight the challenges of synthesizing data from across multiple research institutions and funding cycles, and highlight opportunities for enhanced coordination and data synthesis at a more regional scale.	201D	2:30 PM	2:45 PM
Oyster Metapopulation Modeling to Support Restoration in Louisiana's Coastal Basins	Shaye Sable	A flexible fully coupled oyster metapopulation modeling tool has been developed, calibrated and validated by a multidisciplinary team of modelers, agency scientists, and managers to inform current and future oyster restoration and management planning, scenario analysis, and project performance. The modeling project is supported by LDWF as the lead agency funded under the Monitoring and Adaptive Management Implementation Program (MAIP) by the DWH Louisiana Trustee Implementation Group (LA TIG). The coupled metapopulation modeling approach is comprised of a 3D hydrodynamic (Hydro) model, an oyster larval transport model running on an hourly timestep, and an oyster reef individual-based model (IBM) running on a daily timestep and set up as point models across each coastal basin in Louisiana. The Hydro model generates 3D outputs for water flow, temperature and salinity that are input to the larval transport model, and daily depth-averaged salinity and temperature outputs that are input to the reef IBM point models. The larval transport model is sourced by egg production from the reef IBMs, and larval settlement from the larval transport model drives new spat recruitment on the reef IBMs. Oyster model outputs for reef connectivity and larval settlement, and for reef density, size structure, total biomass, and egg production are used to determine (1) where LDWF should construct protected broodstock reefs, and (2) how oyster metapopulation persistence is maintained across a range of environmental conditions in each basin. The key metapopulation outcomes for Barataria Basin are demonstrated as an example using different broodstock reef locations and designs. The data gaps from the current modeling are described, and the next steps for the team to implement towards improved understanding and modeling are outlined for coastal Louisiana.	204A	2:30 PM	2:45 PM

Title	Speakers	Description	Location	Starts	Ends
Advances in applying oil exposure metrics to fish injury for Natural Resource Damage Assessment in the Gulf	Susan Snyder	Natural Resource Damage Assessment (NRDA) practitioners rely on thresholds for change to determine and quantify injury to natural resources resulting from discharges of oil or hazardous substances. To better understand how chronic and acute oil exposure impacts Gulf fishes, and to support compensatory restoration under NRDA, we are estimating threshold biliary polycyclic aromatic hydrocarbon (PAH) metabolite concentrations corresponding to adverse change in adult fishes. Biliary PAH metabolites are a common biomarker of short-term exposure of fishes to these contaminants in the aquatic environment. While numerous analytical techniques exist, NOAA laboratories have begun using a new compound-specific LC-MS/MS method (da Silva et al. 2023) that quantifies roughly three dozen hydroxylated PAH (OHPAH) metabolites in bile samples, which is advantageous for more confidently assessing exposure and evaluating PAH sources. We must understand the relationship between the results of the new LC-MS/MS method and the standard HPLC-F method in order to interpret fish bile samples, collected for recent Gulf oil spills, in the context of the extensive body of literature and baseline data derived from the HPLC-F method. For a methods comparison, we analyzed 18 bile samples from wild-caught Red Snapper (Lutjanus campechanus) via both methods. Results indicate that the two methods correlate well ($r = 0.75$, $p < 0.001$); however, high outlier values may fall outside of the expected relationship, potentially as a result of the difference in what is detected and reported between methods. Next steps are to estimate biliary OHPAH thresholds for reproductive and growth effects from the literature and apply them to incidents where fish oil exposure levels have been measured by the new LC-MS/MS method. Once developed, these thresholds can be applied to active and future NRDAs across the country, for both oil spills and other sites where PAH exposures are a concern.	201B	2:30 PM	2:45 PM
The Shape of Things to Come: Comparing the Impacts of Human and Natural Infrastructure on the Post-Hurricane Landscape of Southwest Florida	Daniel Ciarletta	Hurricanes Ian, Idalia, Debby, Helene, and Milton brought extreme wave and surge conditions to Florida's Gulf coast over just three years. The combined impacts of these storms lead to extensive ebb channelization of beaches and dunes, prolific overwash, displacement of the shoreline, loss of dune and mangrove vegetation, and damage to human infrastructure. Yet, these impacts were not spatially consistent along the coast, with remote and ground observations revealing substantial variations in landscape response based on existing natural and engineered site conditions. Along the beaches of Southwest Florida, from Sanibel Island south to the City of Naples, differences in pre-storm barrier-island width, dune height, number of relict dunes, and proximity of human development significantly affected the extent of shoreline displacement and style of erosion. For example, strandplain beaches with multiple dune ridges both resisted erosion and trapped washover in interdune swales, creating new subaerial sand reservoirs. Alternatively, narrow beaches backed by open water lagoons were subjected to overwash and breaching, in some cases resulting in the complete destruction of local vegetation. Where buildings and dune crossovers were present, ebb return flows channelized through these features, resulting in the dissection of dunes and beaches by seaward-directed outwash; many such outwashes created by Hurricane Ian were subsequently reactivated in later storms. Paired with observations of post-storm interventions to restore beaches, as well as measurements of natural revegetation, our analyses demonstrate how landscapes only a few kilometers apart can be either highly resistant or extremely susceptible to effects of storm erosion. When combined with modeling and co-produced insights from managers and local jurisdictions, our results have the potential to provide substantive value for seaside communities as they secure the shape of the coastal landscape in the coming years.	202A	2:30 PM	2:45 PM

Title	Speakers	Description	Location	Starts	Ends
Pairing UAS with Decision-Support Applications as the Primary Operational Engine for Maritime Disaster Response	Eric Garza	Hurricane Milton made landfall as a Category 3 storm on October 9, 2024, displacing hundreds of vessels that posed pollution risks to Gulf waters. As part of the response, the U.S. Coast Guard (USCG) operationalized integration of small Unmanned Aerial Systems (UAS) with RPI's Vessel All-hazards Debris Response (VADR) application (included in NOAA's response toolkit). A fourteen-person USCG Port Assessment Team employed Parrot ANAFI USA and Skydio X2D drones under pre-existing FAA emergency authorization, conducting 72 missions totaling 112 flight hours between October 10-28. The team assessed 652 pollution-threat vessels across 72 square nautical miles encompassing Port of Tampa Bay and Port Manatee facilities generating $42 billion annually and supporting 234,000 jobs. The integrated UAS-VADR workflow transformed aerial imagery into georeferenced pollution assessments with risk scores, enabling prioritized contractor removal operations. The response achieved 100% target assessment in 19 days, facilitating removal of 1,460 gallons of oil and hazardous substances at a cost of $500,000 while preventing an estimated 1.2-1.5 million gallons from entering Gulf waters. Cost-effectiveness ratios of $342 per gallon removed and $0.33-$0.42 per gallon prevented represent one of the most efficient post-storm pollution responses in recent history. Operations overcame communications blackouts using Starlink and maintained 24/7 tempo with portable generators. Both ports reopened on schedule, and ten federal pollution cases were initiated. This response yielded a replicable "Milton Package" requiring minimal investment: two thermal/zoom sUAS, one Starlink terminal, VADR-trained personnel, pre-season FAA authorization, and annual exercises. This shows that commercially available drones paired with decision-support applications serve as the primary operational engine for maritime disaster response, shifting remote sensing from analysis to actionable intelligence.	202B	2:30 PM	2:45 PM
Leveraging a robust decision making framework to inform holistic management of a transgressive barrier island coastline; southeastern Louisiana	Wilke Coleman	Barrier islands are important geomorphic features that provide habitat to diverse ecosystems and protect backbarrier environments from the destructive consequences of tropical storms. In southeastern Louisiana, barrier island systems have evolved dramatically in the recent geologic past due to Mississippi River avulsions, coastal reworking, and anthropogenic modifications to the landscape that affect hydrology and sediment dynamics. These factors have led to extreme rates of land-loss and transgression, and require a human response to offset sediment deficiencies so that barrier systems can remain in equilibrium with the surrounding environment. Adequate sand and mixed sediment resources suitable for restoration however are a scarce commodity proximal to the Louisiana coast. In order to maximize the benefit of renourishment efforts, a holistic approach to Regional Sediment Management (RSM) is required that emphasizes system-wide littoral dynamics and strategic resource extraction. The Barrier Island System Management (BISM) program was developed to provide decision-makers with a comprehensive workflow designed to assist in maintaining barrier health over projected 50-year timescales. This framework utilizes modeling techniques grounded in Robust Decision Making (RDM) to programmatically allocate sediment resources to barrier islands. Additionally, the Barrier Island Restoration Tradeoff Analysis (BIRTA) toolkit considers variables such as RSM and socioeconomic benefit to provide an array of potential projects and restoration schedules. These scenarios can be manually assessed and modified as necessary in response to unpredictable variables such as tropical storms. This analysis presents a high-level overview of the BIRTA toolkit and outlines the utility of BISM to convey a path forward that holistically implements RSM to maintain the Louisiana barrier coastline.	201C	2:30 PM	2:45 PM

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Title	Speakers	Description	Location	Starts	Ends
Diving Deeper: Integrating SCUBA into High School Marine Science for Standards-Aligned, Place-Based Learning	Jessica Sampley	In an innovative expansion of marine science education, Gulf Shores High School has embedded SCUBA certification into its high school marine science curriculum, aligning diving skills with Alabama State Science Standards, NGSS, and CTE frameworks. This presentation will showcase how SCUBA training transforms traditional instruction by immersing students—literally and figuratively—in the ecosystems they study. Through partnerships with a local dive shop, certified diving instructors, and other local experts, students not only earn their open-water certification, but they also engage directly with the local environment through oyster gardening, water quality monitoring, ecosystems surveys, and more. The program enhances student engagement, fosters career exploration, and empowers learners with real-world scientific and technical skills. The session will highlight lessons learned during creation, implementation, cross-curricular alignment strategies, and how safety, equity, and access were prioritized throughout program design. District administration and two classroom teachers will co-present, sharing student outcomes, instructional strategies, funding, community partnerships, and classroom-to-field integration tips. Importantly, this program builds on place-based, environmental learning efforts previously implemented in Gulf Shores City Schools, now expanded through the Gulf Research Program-funded initiative, Alabama Gulf Coast Resiliency Project: Sustainability, Full STEAMM Ahead. Attendees will gain insight into designing field-based programs that elevate student voice and deepen community partnerships, while meeting academic and workforce goals.	203B	2:30 PM	2:45 PM
Advancing Acoustic Perspectives: Lessons from 15 Years of Mesopelagic Sound Scattering Layer Research in the Gulf of Mexico	Kevin Boswell	Sound scattering layers (SSLs) are widespread features across the world's ocean basins and the organisms comprising these layers mediate key pathways of energy and material transfer. Although globally distributed, SSLs can vary widely in depth, structure, migration behavior, and taxonomic composition across basins. Through one of the longest continuous oceanographic timeseries in history, we have been examining the SSLs in the northern Gulf of Mexico to better understand the dynamic processes that shape these important communities. Here we present the emergent patterns observed since the program's inception and explore how the implementation of acoustics, coupled with other approaches, have informed our understanding of this hyper-diverse deep-water ecosystem. Through the lens of acoustic approaches, we examine the bio-physical controls and migration dynamics of SSLs and dive deeper into enhancing the interpretation of ship-borne acoustic surveys through autonomous platforms and observations. Finally, we explore the coupling of deep-pelagic SSLs with the dynamic shelf–slope communities of the northern Gulf, underscoring ecosystem connectivity across depth gradients.	106B	2:30 PM	2:45 PM

Title	Speakers	Description	Location	Starts	Ends
Integrating Scientific Literacy and Public Engagement: Interactive Escape Rooms as Communication Tools for Climate Resilience Outreach in the Gulf	Azareah Carson	Across the Gulf Coast, connecting climate science to everyday decisions remains a challenge, especially when discussing the improvement of community resilience awareness. To bridge this gap in young adults, a series of immersive escape room activities were developed to translate complex topics, such as sea-level rise, extreme weather preparedness, and the role of nature-based solutions into accessible, place-based learning experiences. Rooted in Gulf Coast ecosystems and hazards, each activity works to engage young adult participants in problem solving scenarios inspired by real world environmental challenges, prompting them to think critically about local impacts and adaptation strategies. Through this integrative approach, place-based outreach not only highlights the Gulf's unique environment but also meets community members where they are. By transforming scientific data, historical trends, and projections into interactive narratives, participants explore how rising seas, coastal erosion, and storm events affect both ecosystems and infrastructure and how marsh restoration, green infrastructure, and evacuation planning can mitigate these risks. Beyond awareness-building, the escape room model fosters meaningful dialogue between scientists and young adults, translating research into community action. Participants leave with an improved understanding of climate drivers and practical steps for preparedness while researchers gain insights into community perceptions and communication gaps. Lessons learned from these events highlight the importance of meeting audiences where they are (socially, geographically, and emotionally) and providing messaging that supports informed decision making. This project demonstrates creative, science-based engagement tools that can transform abstract climate projections into tangible community conversations across the Gulf region.	106A	2:30 PM	2:45 PM
Using Autonomous Recording Units to monitor Eastern Black Rails (Laterallus jamaicensis jamaicensis): Lessons learned and future directions	Abigail Blake-Bradshaw	Eastern Black Rails (Laterallus jamaicensis jamaicensis) are notoriously difficult birds to detect because they vocalize infrequently, rarely fly, and inhabit densely vegetated wetlands. As such, there is growing interest in using autonomous recording units (ARUs) to supplement laborious in-person surveys and improve monitoring protocols for this threatened, cryptic species. To provide guidance for biologists considering ARUs to monitor Black Rails, researchers with the NOAA Firebird project conducted several studies to evaluate the utility of ARUs for surveying Black Rails in a variety of contexts. Specifically, we tested detection across a range of distances, vegetation types, and environmental conditions; compared detection rates between in-person observers and ARUs; and evaluated the relationship between Black Rail abundance and calling activity. Additionally, in collaboration with researchers across the range, we evaluated the utility of BirdNET to automate the process of identifying potential Black Rail detections, assessed regional differences and temporal patterns in Black Rail calling activity, and examined the influence of local weather and moonlight on calling activity. Generally, detection rates differed by vegetation cover type and distance, and ARUs were able to detect all three Black Rail call types at least half the time at ~170 m across coastal marsh communities. Calling frequency increased with Black Rail density, and ARUs detected approximately 70% of the calls identified by trained field observers, with a negative relationship between ARU detection rates and wind speed. Hourly calling rates differed regionally, but most detections occurred nocturnally between 2100 and 0400. Lastly, calling activity was influenced by moonlight, cloud cover, and wind speed. Ultimately, our findings demonstrate that ARUs provide a valuable alternative for surveying Black Rails but have limitations worth considering. We will discuss our results in the context of future monitoring needs.	201A	2:30 PM	2:45 PM

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Title	Speakers	Description	Location	Starts	Ends
From past to future: understanding habitat change and building coastal resilience in Texas under sea level rise	Mukesh Subedee	The next version of the Texas Coastal Resiliency Master Plan (TCRMP) is under development and scheduled for release in 2028. The Harte Research Institute (HRI) has been involved since the inception of the TCRMP planning process 10 years ago. For the 2028 plan, HRI aims to enhance community resilience by improving our understanding of ecosystem vulnerability to sea level rise (SLR) and informing proactive planning. Building on previous work, we updated SLAMM (Sea Level Affecting Marshes Model) outputs using improved inputs and numerical parameters (e.g., DEM, landcover, and accretion rates) for 0.5 m and 1.5 m SLR scenarios by 2100. These updates provide refined projections of habitat change, including marsh, flats, and other critical environments, and help identify when significant impacts occur. In addition to future projections, we conducted a habitat transition analysis from the past to the present to understand the historical drivers of change and contextualize long-term trends in vulnerability. This dual approach - retrospective and predictive - enables classification of coastal units according to the principal causes of change, such as development pressure, geomorphic shifts, subsidence, and sediment supply. It also supports the identification of Areas of Interest (AOIs) where vulnerabilities are greatest, and resiliency projects are most needed. Results will inform resilience strategies and projects for inclusion in the TCRMP. By combining improved modeling with stakeholder-driven planning, this work provides a science-based foundation for adaptive management under accelerating climate-driven change.	202A	2:45 PM	3:00 PM
Recycled Glass Sand as a Pathway to Gulf Coast Stewardship	Jolie Griffey	The Glass Roots project brings a place-based education framework to 5th–8th grade students along the Mississippi Gulf Coast by connecting classroom science to real-world coastal challenges.The project introduces two locally limited resources, native marsh plants and sand, through the innovative use of recycled glass sand as a growing medium. As restoration needs continue to rise across the Gulf due to habitat loss, the availability of nursery-grown plants and clean sediment has increasingly become a limited resource. This project gives students firsthand experience with an emerging solution to these resource constraints. Across the three coastal counties, thirteen teachers are leading students in cultivating Distichlis spicata in school greenhouses while experimenting with varying soil-to-glass sand ratios, fertilizer levels, and salt concentrations to determine the best growing conditions with glass sand. This hands-on experience allows students to collect their own data, exploring how different conditions influence plant growth and resilience. Throughout the project, students are learning how coastal marshes provide critical ecosystem services, such as providing critical habitat for native species, storing carbon, filtering nutrients, and providing natural protection from rising seas. By growing plants for restoration in recycled glass sand and experimenting to find the optimal conditions, students play an active role in exploring sustainable solutions to coastal issues. This presentation will highlight the implementation process, experiment outcomes, and results from the project's first year, demonstrating how place-based implementation enhances student engagement, strengthens teacher collaboration, and deepens understanding of local environmental issues. The Glass Roots project serves as a model for integrating regional context into STEAM learning to cultivate environmental literacy and stewardship in Gulf Coast youth.	203B	2:45 PM	3:00 PM

Title	Speakers	Description	Location	Starts	Ends
Indicators of Barrier Island Resilience and Resistance	Soupy Dalyander	Barrier islands are shaped by a variety of short- and long-term environmental processes such as storms and relative sea level rise. These islands, found along the estuarine-marine interface, provide ecosystem services including storm surge and wave attenuation, erosion protection to inland marshes, habitat for fish and wildlife, and recreation. Natural resource managers require actionable information on how barrier island resilience and resistance change over time. This information strengthens managers' understanding of how an island's current state relates to past conditions and informs restoration focus. The U.S. Geological Survey and The Water Institute are collaborating on a study, which is being funded by the Louisiana Trustee Implementation Group, to develop indicators of resilience and resistance for barrier islands in Louisiana. Here, resilience captures island persistence on yearly to decadal time scales, and resistance captures persistence on event time scales of days to weeks. We have developed resilience indicators based on subaerial land and vegetation coverage from satellite imagery that capture the state of islands in the context of their long-term trajectories. Similarly, we have developed resistance indicators based on subaerial island configuration and water level recurrence as a proxy for evaluating island resistance to storms. Our approach utilizes readily available land cover products and elevation datasets to develop screening-level metrics related to barrier island resilience and resistance. The team developed additional targeted resilience and resistance indicators and associated analyses to provide detailed information for specific time periods or management applications (e.g., wildlife management). The team will present these results and illustrate how the metrics can be used to compare islands regionally along the Gulf Coast to evaluate the impact of restoration activities.	201D	2:45 PM	3:00 PM
Transforming SCAT with Remotely Sensed UAS Imagery: Oil Spill Response in Marsh Environments	Jennifer Horsman	The Shoreline Cleanup Assessment Technique (SCAT) was created as a systematic way to survey shorelines affected by spilled oil. SCAT begins in the early stages of a response to assess initial shoreline conditions and continues throughout cleanup activities until final signoff. Traditional SCAT teams survey shorelines by boat or on foot, but some areas, like sensitive marsh environments, are difficult to access using these methods. New methods for conducting SCAT surveys were employed during a recent oil spill response to a wellhead blowout in the marshes of Louisiana's Pass A Loutre State Wildlife Management Area. After initial overflights were conducted from traditional aircraft to define the incident impact area, multiple UAS missions were flown over the site to collect orthomosaic imagery of all the shorelines and marsh habitats affected. A battery-charging station allowed the UAS team to continually fly with minimum downtime, covering 1800 acres of marsh in just 14 hours over 2 days. Images were processed into orthomosaics while still in the field and then uploaded into the Common Operating Picture (COP) to help direct response operations. Additionally, the UAS orthomosaics successfully captured floating oil and sheens on the water between marshes. Due to the success of the reconnaissance UAS missions, it was decided that the SCAT process would also be conducted by collecting UAS orthomosaics over the impacted shorelines. Trained SCAT teams reviewed the orthomosaics in a GIS and characterized the presence of oil by editing attributes in an online feature service representing the shoreline, a process similar to conducting traditional SCAT surveys in the field by recording observations on paper forms. The process was reviewed by experienced SCAT personnel and lessons learned during this incident will be used to make improvements for future responses.	202B	2:45 PM	3:00 PM

Title	Speakers	Description	Location	Starts	Ends
Modeling the effectiveness of sand placement strategies on barrier island resilience in a semi-enclosed bay system	Davina Passeri	Barrier islands provide natural protection for mainland coastal communities by reducing storm surge inundation and dampening wave energy. In addition to storm damage reduction, they offer critical habitats for a variety of species such as shorebirds, sea turtles and beach mice. Little Dauphin Island is a relic spit that is detached from the larger barrier island Dauphin Island, located off the coast of Alabama. The island is uninhabited and serves as an important nesting and foraging area for coastal bird species as part of the Bon Secour National Wildlife Refuge. Historically, there has been no management interventions on the island; however, habitat quality has deteriorated due to erosion during extreme storms such as Hurricane Ivan (2004), Hurricane Katrina (2005) and more recently Hurricane Sally (2020). Management of the island requires detailed observations and predictive models to optimize sand placement strategies and increase resilience. This study applies process-based numerical models to simulate fair-weather sediment transport and storm-driven beach and dune evolution. Five proposed restoration scenarios were considered: a no-action scenario, tidal inlet channel realignment, sand motor nourishment, traditional beach and dune nourishment, and construction of an offshore borrow area. The model results show how to leverage the natural sediment dynamics of the system combined with restoration to reduce storm impacts (erosion, breaching) while preserving key ecological habitats for shorebirds. The study highlights the levels of effectiveness for different types of nourishment strategies as a result of hydrodynamic processes in this understudied type of semi-enclosed back-bay environment as opposed to an ocean-facing barrier island system.	201C	2:45 PM	3:00 PM
Lessons from the road: meeting Gulf communities with photorealistic flood visuals, maps, and clear, local messages	Dan Rizza	This talk shares “lessons from the road” from Climate Central’s Edge of America tour — during which we drove along America’s coasts from Maine to Texas and used our FloodVision technology to generate photorealistic flood visuals and finished-floor elevation (FFE) estimates, meeting people where they live and work. We saw the same pattern across roles and backgrounds: when residents and officials see places they care about experiencing plausible flood scenarios, abstract risk becomes more concrete, and conversations can shift to problem-solving. We pair these field lessons with a demonstration of Coastal Risk Finder, our coastal risk mapping platform — redesigned after a year-long, 100+ stakeholder needs assessment and built to make complex science digestible. The platform lets users customize rising seas and coastal flood scenarios and immediately see a range of one-sentence “what this means for your place” takeaways, along with supporting content, graphics, and sources. Content is organized through persona-based user guides — for officials, community leaders, educators, and media — providing each audience with peer use cases and solutions-oriented steps. Our approach reflects more than a decade of building and hosting public tools, maps, reports, and visualizations grounded in peer-reviewed research and informed by coastal stakeholders. These resources have been shared by the news media tens of thousands of times, used by millions, and featured at the UN climate conference. We’ll show how officials use these visuals and tools for public awareness, emergency briefings, resilience planning, grants applications, and much more. Taken together, the lessons from the Edge of America Tour and Coastal Risk Finder’s design choices share a straightforward recipe for Gulf practitioners engaging with audiences and planning for resilience— lead with a local place; show climate-impact visuals, maps, and clear one-line takeaways; then link to solutions-oriented steps.	106A	2:45 PM	3:00 PM

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Title	Speakers	Description	Location	Starts	Ends
Rhythms of the Deep: Characterizing the Heterogeneity of Diel Scattering Layer Communities with Wideband Echosounding and Probabilistic Echo Solving	Haley Glasmann	The deep scattering layer (DSL) is a ubiquitous feature across the global ocean composed of a diverse group of organisms, collectively known as mesopelagic micronekton, who play key roles in carbon cycling and serve as important pelagic prey resources. Yet, the fine-scale vertical structure and dynamics of the DSL remain largely understudied. The DSL in the northern Gulf of Mexico was examined using shipboard and autonomous wideband echosounders. An unsupervised machine learning framework was applied to wideband backscatter data to identify unique morphological groups (echo-types) and assess their distribution during the daytime within the DSL. Echo-type dynamics were further explored during diel vertical migration using an image processing algorithm to segment migrating layers and assess heterogeneity within and across them. Multivariate and network analyses provided strong support for depth and site-specific patterns, potentially linked to predation risk, reproduction, life-history traits, physicochemical conditions, or oceanographic forcing. Next, to complement this fine-scale view, multifrequency shipboard echosounders and depth-stratified net catch data were integrated in a Bayesian probabilistic echo solving model to produce a comprehensive deep-pelagic time series. Together, these approaches provide new insights into the vertical complexity of mesopelagic communities and new avenues to examine the deep-pelagic at the micro and macroscale level. Moreover, this work underscores the value of integrating multiple data sources with shipboard echosounders and utilizing novel modeling approaches, to further disentangle the ecological interactions, life history strategies, and oceanographic features contributing to mesopelagic community structure.	106B	2:45 PM	3:00 PM
CANCELLED Firebird Project: Prescribed Fire and Rare Birds Associated with High Marshes along the Northern Gulf Coast	James Cox	Fire is a recurring force affecting coastal ecosystems across the northern Gulf Coast. The irregularly flooded high marshes located between fire-prone uplands and more frequently inundated wetlands are no exception and are dominated by plants adapted to and sustained by regular and recurring fires. High marshes also support imperiled Black Rails, rare Seaside Sparrows and Yellow Rails, and Mottled Ducks, a popular game species. Significant gaps exist regarding the effects that prescribed fires mimicking natural fire regimes might have on these taxa, but data from the Firebird Project are being used to develop recommendations and identify additional research needs. Recommendations based on the first 5 years of study will be provided in a forthcoming publication and are couched in terms of the factors that practitioners' control when conducting a prescribed burn.	201A	2:45 PM	3:00 PM

Title	Speakers	Description	Location	Starts	Ends
Scenario-Based Modeling of Bonnet Carre Spillway and Riverine Inflow Sensitivity on Oyster Habitat Suitability in the Mississippi Sound	Ali Emre Koruk	The Bonnet Carré Spillway (BCS) serves as a key flood-control structure on the lower Mississippi River, but its operation introduces substantial freshwater into estuarine systems such as the Mississippi Sound, often disrupting salinity regimes critical to oyster habitat viability. This study integrates physical modeling and a Habitat Suitability Index (HSI) framework to evaluate how variations in riverine inflow magnitude and spillway operation scenarios impact oyster habitat suitability across biological life stages and seasonal cycles. Using the msbCOAWST modeling system, we simulated observed and alternative BCS scenarios from 2018 to 2020, focusing on the double openings of 2019. Scenario variations included discharge thresholds (e.g., 1.2–1.25 million cfs at Baton Rouge), shortened or without second opening, and modified pacing of spillway operations. Twin simulations using distinct river datasets enabled sensitivity analysis under contrasting freshwater inputs. HSI scores were calculated for four oyster life stages (larval, spat, seed, sack) using daily surface and bottom salinity at ecologically significant reefs across the Western, Central, and Eastern Mississippi Sound. Results showed that Case 2, which reduced freshwater diversion from 572% to 86% of Lake Pontchartrain's volume, significantly improved salinity conditions and habitat suitability—especially during the critical summer and fall periods. Seasonal-averaged HSI scores revealed that Western and Central Sound reefs experienced the greatest benefit under modified scenarios, indicating the potential for improved ecological outcomes through adaptive flow management. This work highlights the significance of integrated modeling to inform operational strategies that balance flood control with estuarine ecosystem resilience, providing a transferable tool to support coastal resource management under future climate and hydrological uncertainty.	204A	2:45 PM	3:00 PM
Visualizing Numeric Regional Hydrodynamic Models	Felimon Gayanilo	Numerous published models exist in the Gulf, along with many ongoing efforts aimed at enhancing our understanding of the complex hydrodynamics of the Gulf of America. These models are often disseminated through journals, white papers, presentations, and outputs presented as matrices of generated data. While they are invaluable to some researchers and scientists, visualizing water flows and other matrices of environmental parameters remains a significant challenge. Visualizing the model's output in seconds, is crucial for making informed decisions, especially during time-sensitive operations. To address this need, the Gulf of America Coastal Ocean Observing System (GCOOS) has introduced a user-interactive tool for model visualization known as the GCOOS Regional Model Handler/Viewer (https://modelhandler.gcoos.org/), developed at the Harte Research Institute, Texas A&M University-Corpus Christi. By integrating actual data observations, the models can be validated, calibrated, and assessed for their performance. Crucially, visualization tools enable effective communication with stakeholders. This paper presents the GCOOS Regional Model Handler/Viewer, discusses the impact of visualizing complex regional models, and outlines the approach taken to develop the tool.	106A	3:00 PM	3:15 PM
Restoration and Management of Priority Habitats: Living Shorelines and Beyond (GOAA Habitat Resources Team)	James Pahl	The Gulf of America Alliance Habitat Resources Priority Issue Team (HRT)'s Living Shorelines Focal Area was advanced to develop, promote, and evaluate best practices that allow stakeholders to implement living shorelines as an alternative to traditional shoreline protection methods. This working session of the HRT's Living Shorelines Assessment Focal Area Working Group will discuss how the information and findings presented during relevant sessions planned for earlier that day for the Gulf Conference apply to the Alliance's current living shorelines goals, and how they inform the development of the Alliance HRT's 2026-2031 expanded Restoration and Management of Priority Habitats Focal Area work plan. The HRT encourages all conference attendees interested in Gulf shoreline and habitat restoration to attend and contribute to this conversation. Session Agenda	203A	3:30 PM	5:00 PM

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Title	Speakers	Description	Location	Starts	Ends
Panel Discussion: Relationships and underlying mechanisms between environmental trends and variability and fisheries populations	John Lehrter	Panel discussion with presenters from the Relationships and underlying mechanisms between environmental trends and variability and fisheries populations session. Including speakers and some folks on the fisheries management side to answer questions about how they may use information such as presented in the session talks in fisheries management.	201B	3:30 PM	4:30 PM
Linking Harmful Algal Bloom Science to Management (GOAA Water Resources Team)		All conference attendees are welcome to join us to discuss how to better link Harmful Algal Bloom (HAB) science to management. Lightning talks from Gulf states' HAB monitoring and regulatory programs will inform breakout discussions on barriers, needs, knowledge gaps, and applications linking HAB scientific work and management. Session Agenda	204B	3:30 PM	5:00 PM
Oysters: Converting Rocks to Living Shorelines	David Buzan	A 1.2-mile-long low rock breakwater was constructed in two phases, the first in May 2017 and the second in August 2022, to protect a severely eroding marsh. The project was built in Matagorda Bay, Texas. Freese and Nichols, Inc. designers wer forced to consider tradeoffs between building a tall breakwater which would protect a shorter reach of marsh or a shorter breakwater that would extend further but might not offer the same level of protection with sea level rise as a taller breakwater. Observations by the design team along the Texas coast indicated oysters colonize structures up to 0.5 feet above MSL. Live oysters do not persist at that level but will continue to settle there. Based on this information, the team decided to construct the breakwater with a crest 0.5 feet above MHW, hoping oysters would colonize the sides of the breakwater and its top as sea level rose. In less than three years after construction, oysters were colonizing the top of the breakwater. With time, it is hoped the rock breakwater forms the core of a living yster reef that continues to vertically accrete with oyster growth. Seventy days post-construction, dense accumulations of one-inch long oysters had formed. Oysters over 2.5 inches long were seen 6.5 months later, and oysters over 5 inches long were found less than three years. Oysters were also encountered growing under breakwater rocks. In addition to addressing the question whether oysters would colonize the top of the breakwater, there was concern whether oysters would colonize the high energy, bay side, of the breakwater facing Matagorda Bay that receives waves generated across 12 miles of fetch along the axis of prevailing southeast winds. To date oysters have colonized both sides of the breakwater although they do not seem to appear as high on the bay side of the breakwater.	204A	3:30 PM	3:45 PM

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Title	Speakers	Description	Location	Starts	Ends
Connecting Active Acoustics and Net Catch in the Northern Gulf using the Forward Method	Ian Areford	Mesopelagic micronekton refers to organisms between 2 to 20 cm in size that inhabit the mesopelagic zone (200 – 1000 m) of the ocean. Mesopelagic micronekton are an extremely abundant and diverse group which plays a large role in ecosystem functioning and biochemical cycling due to their roles as meditators between oceanic zones and trophic levels. The mesopelagic zone's extreme conditions and vast size make the scientific study of mesopelagic micronekton complex and expensive, leaving large knowledge gaps in their biology and ecology. Two primary sampling techniques used in the study of micronekton are active acoustics and net trawling, both of which offer distinct strengths and limitations. Trawl data while providing key information about species composition and size information, suffers from limited spatial and temporal resolution, while active acoustic data offers continuous, high-resolution spatial and temporal information but lack direct taxonomic information. Bridging these complementary approaches is a central challenge in answering key questions about mesopelagic micronekton such as estimates of their biomass and their spatial and temporal distributions. One such approach that attempts to combine these two sampling modalities is the "forward method," which predicts acoustic backscatter from known species composition, size distributions, and abundance using theoretical scattering models. The present study's aim is to interpret shipboard acoustics at 18, 38, and 70 kHz relative to trawl sampling data collected in the northern Gulf utilizing the forward method. This study utilized active acoustic and MOCNESS net catch data collected during the DEEPEND|RESTORE (Deep Pelagic Nekton Dynamics of the Gulf of Mexico) and DSB (Deep-Sea Benefits) research programs. Theoretical scattering models tuned to organismal traits, such as swim bladder parameters, body shape, and composition simulate expected backscatter. Preliminary results highlight the disproportionally large influence of swim bladdered fishes on modeled acoustic backscatter and highlight the inherent biases and challenges impacting the interpretability of active acoustic and net catch data.	106B	3:30 PM	3:45 PM
Reframing Climate Resilience: Translating the Science into Palatable Pathways for Progress	Andrew Medhurst	Climate resilience efforts often stall not because of a lack of science, but because of a lack of resonance. Technical language, politicized framing, and vague long-term deliverables can alienate the communities that resilience practitioners aim to empower. This session explores strategies for reframing climate resilience in ways that connect with the values, priorities, and lived experiences of Gulf Coast residents. Drawing on examples from community workshops, outreach events, and educational programming, the presentation demonstrates how reframing "climate resilience" can shift conversations to become more productive and meaningful. This presentation will discuss practical methods for translating data into meaningful narratives, identifying trusted messengers, and aligning resilience messaging with local economic, cultural, and faith-based values. The session demonstrates how small adjustments in tone and emphasis can yield major gains in engagement, policy support, and community buy-in. Participants can leverage these strategies and integrate these practices into their existing resilience projects and frameworks to enhance participation and overcome reluctance to engage in climate resilience efforts in their communities.	106A	3:30 PM	3:45 PM

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Title	Speakers	Description	Location	Starts	Ends
The Utility of Periodic Program Synthesis: Evolution of the Role of Synthesis in the Columbia Estuary Ecosystem Restoration Program	Heida Diefenderfer	The Columbia Estuary Ecosystem Restoration Program (CEERP) was created after the year 2000 when the National Oceanic and Atmospheric Administration (NOAA) identified habitat restoration in the estuary as providing potential offsite mitigation for impacts of the Federal Columbia River Hydropower System on wild salmon and steelhead stocks. Program development was led by Bonneville Power Administration and the U.S. Army Corps of Engineers with scientific support from Pacific Northwest National Laboratory (PNNL) and NOAA. From the release of the Research, Monitoring, and Evaluation Plan in 2008, the necessity for Synthesis and Evaluation was identified. This included the periodic synthesis and reporting of regional scale data and an approach to evaluate the cumulative beneficial effects of restoration. These syntheses would be applied to evaluate and refine the restoration and research elements of CEERP. Since the Plan, Synthesis Memoranda were released at 5-year intervals in 2013 and 2018, with cumulative effects publications in 2011 and 2016. A 25-year retrospective synthesis is in development. While the first two memoranda were led by PNNL and NOAA, the current draft memorandum is driven by findings from a workshop that included 26 restoration experts who actively contribute to CEERP through their restoration and management roles. These included action agencies and regulators, federal and state agencies, research institutions, restoration practitioners, and non-profit organizations. These findings were synthesized with a new review of the published scientific literature on the Columbia River Estuary to ascertain the baseline knowledge in 2000 as compared to learning since through the CEERP investments in research, restoration, and monitoring of reference and restoration sites. Findings of the third synthesis memorandum are being applied to reenvision the research, monitoring, and evaluation framework and inform the design and engineering of restoration projects.	201D	3:30 PM	4:00 PM
Using Machine Learning and Aerial Imagery to Count Beach Users – A New Approach for Efficiently Measuring Change in Resource Use	Emily Evenden	After the BP Oil Spill, the U.S. federal government and Gulf states pursued compensation for economic losses resulting from diminished recreational beach use. The industry standard for measuring change in beach use requires human analysts to count beach-users manually from aerial imagery. Recent advancements in machine-learning (ML), artificial intelligence (AI) and drone technology have created opportunities to improve the efficiency and cost-effectiveness of this manual method. In this presentation, we introduce an ML-enabled method to automatically count beach-users from aerial imagery. Although developed in the context of oil spill damage assessments, this new approach may provide reliable information at a reasonable cost and therefore enable use of aerial imagery in other contexts (e.g., resource inventories, crowd forecasting, etc). We discuss successes and challenges operationalizing this method and outline a realistic path forward for further intergration of ML into real-world applications of remote sensing.	202B	3:30 PM	3:45 PM

Title	Speakers	Description	Location	Starts	Ends
Firebird: Co-Production of Prescribed Fire Science in High Marsh, Lessons Learned and Next Directions	Auriel Fournier	Starting in 2019, the Firebird project has worked to understand the impacts of prescribed fire on three bird species of conservation concern in high marsh systems along the northern Gulf Coast. To start, we convened scientists and end users to identify key uncertainties that, if addressed, will improve management decisions and outcomes. We then created the first US Gulf Coast-wide map of high marsh habitats, assessed whether atmospheric circulation patterns have changed over the past several decades to impede our ability to use prescribed fire, and collected data across all 5 US Gulf Coast states for mottled duck, eastern black rail, and yellow rail during the breeding and non-breeding seasons. Bird and vegetation data were brought together through an adaptive management process to create a Bayes Net that predicts the impact of fire return interval, along with vegetation characteristics, on the occupancy of mottled ducks and black and yellow rails during the breeding season. Prescribed fire is a management action where the response of the vegetation and other habitat characteristics are time and species dependent. We worked with end users to identify additional questions around microtopography of these high marsh wetlands. This information will be used to guide future efforts of data collection and analysis planning for four more years of data collection in Louisiana, Texas, and Florida from 2026-2030. Our project will include >10-year time series of the response of our priority bird species and their habitat to different intervals of non-growing season prescribed fire. This presentation will emphasize the processes we went through to incorporate the input of end users, decision makers, and biologists throughout the current project and the one about to begin. We will also highlight lessons learned for identifying new key areas of uncertainty to inform our second five-year phase.	201A	3:30 PM	3:45 PM
Preserving Barrier Island Resilience and Ecosystem Services through Land Conservation	Karla Klay	Artist Boat obtains land conservation, with input from scientific and engineering knowledge, often using economic values associated with human resilience to justify land acquisition on a barrier island with high land values and extreme development pressures. It might seem that land conservation is not achievable in many barrier island and peninsula coastal communities. However, this may not be true provided the value of improving resiliency and ecosystem services outweigh arguments of the cost of the land. This session will explore ways Artist Boat has utilized economic valuations of resiliency to compete for funds nationally for land conservation. By translating the ability of land conservation to increase property taxes in cities, increase scores in the Community Rating System to reduce flood insurance for tax payers, address and mitigate for sea level rise and extreme flooding events, address increased demands by citizens for greenspace and viewshed protection, protect barrier islands from geohazards and keep the barrier islands functional, support and enhance critical ecotourism industries, and support sustainable recreational and commercial fisheries Artist Boat has “won” over $36 Million dollars in federal and state conservation grants to conserve 1,039 acres with 204 acres underway on west Galveston Island. Barrier islands and peninsulas are unique in their resiliency functions in the coastal environment making them extremely value for conservation purposes. And typically, they are under dense and high-value development pressures making them exceptionally expensive places to conduct conservation. While land conservation requires extreme passion to pursue anywhere on earth there is no place like lands facing the Gulf where conservation requires “smart resiliency” calculations that benefit human communities more than increased taxes, tourism, and jobs from development of land. Artist Boat changed this conservation conversation on Galveston Island.	202A	3:30 PM	3:45 PM

Title	Speakers	Description	Location	Starts	Ends
The Impact of Youth Experience through an Environmental Justice lens	Amy Neblett	Exploring Environmental Health Hazards with STYLE (Sustained Training for Youth Leadership in the Environment) is a place-based and phenomena-driven high school program that engaged students through classroom hands-on discoveries, field investigations and a PAID Field Mentorship program to investigate the effects of environmental hazards on the health and resiliency of their local communities. Through a National Academies of Science Gulf Research Program grant, Artist Boat led classroom workshops combining art and science about blue carbon and coastal prairies. Students then paddled tandem kayaks along the Coastal Heritage Preserve's margins and used scientific equipment to collect data. The second field adventure allowed the students to explore and restore coastal prairies while learning how land stewardship can result in environmental benefits to larger systems and help support biodiversity. These workshops and adventures were created to give high school students experiences that allow them to choose careers in the future. Some students then participated in a paid field mentorship that had students working with University of Texas Medical Branch scientists to learn about Environmental Justice and Resiliency in their coastal communities. Students learned how to use air, water and soil testing equipment, collected data around Galveston Island natural and industrial areas and then learned how to read the data from scientists currently studying these topics. They worked with doctors studying metals in the local soil and assisted in creating hydroponic and aquaponic gardens for parts of the community to use for growing fresh vegetables not contaminated with post hurricane sludge. Partners included UTMB Sealy Center, Hurricane Hal, Poison Control, Water Quality of Illinois, Green HOUS, and the National Lab. At the end of the week, students gave a three-minute thesis on a portion of the data collected.	203B	3:30 PM	3:45 PM
Advancing Beneficial Use Practices for Navigation and Habitat Resilience: Regional Sediment Management Port Mansfield, Texas	Derek Salazar	Port Mansfield Channel, on the Texas coast adjacent to the Padre Island National Seashore, connects the Gulf of America to Laguna Madre, supporting fishing, tourism, USCG access, and influencing Brazos/Santiago Pass shoaling. Since its 1957 construction, the channel has faced instability and shoaling, especially at the Gulf entrance where sand bypassing the south jetty infills the channel. Despite jetty reconstruction ('62) and routine USACE dredging, maintenance is needed every <2 years to keep the pass navigable. Records show ~350,000 CY/yr shoaling, with >1M CY removed during lapses, limiting reliability for commerce. Adjacent habitats are stressed. Gulf shoreline north of the channel erodes 5–12 ft/yr, threatening Kemp's Ridley nesting and Piping Plover foraging habitat. In Laguna Madre, rookery islands near the GIWW risk complete loss within decades; statewide assessments predict multiple high-priority islands gone within 50 years without action. Seagrass trends show statewide legacy losses and declines, with sea-level rise adding pressure. Multiple private, federal and state agencies, along with Stantec, are advancing a regional sediment management program to turn the dredging into ecological and community resilience. Beneficial use of dredged material will maintain navigation in the channel, nourish beaches, and restore rookery islands. For the Entrance Channel, a long-term sediment bypassing plan to transfer material to Padre Island Seashore was developed. Novel design principles, like strategic benthic habitat gaps and specialized templates, enhance sustainability, improve turtle nesting habitat, and maintain shore bird foraging zones. These designs integrate with federal dredging while enabling Port action during funding gaps. In the Laguna Madre, hydrodynamic modeling and coordination with agencies will help develop alternatives for rookery island creation, restoring bird habitat and improving seagrass beds. Phase I includes seagrass mapping, Delft3D modeling, and evaluation of containment and phasing strategies to reduce costs while expanding habitat diversity. This integrated effort aims to reduce maintenance cost, restore critical habitat, and transform a historically unstable channel into a driver of resilience, providing a model for Gulf-wide sediment strategies.	201C	3:30 PM	3:45 PM

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Title	Speakers	Description	Location	Starts	Ends
Expanding Climate Ready America Navigators and Climate Innovation Centers Across the Gulf	Kim Adams	Climate Ready America is an initiative of the Geos Institute that aims to ensure that all communities have access to the climate resilience assistance they need, regardless of their size, location, or wealth. A scalable, collaborative service delivery system that helps communities adapt to changing climate conditions and reduce climate pollution, Climate Ready America aligns in-state efforts, connects service providers, and amplifies proven solutions while reducing duplication and inefficiency. This flexible, iterative structure builds on what works to ensure communities and climate organizations can thrive and make measurable progress toward national climate targets. Climate Ready America is designed to work where climate resilience action matters most - at the local level. Each Climate Innovation Center is guided by in-state climate leaders who understand the realities and needs of the communities it serves. Navigators are hosted by trusted in-state organizations and provide direct resilience services to under-resourced communities. Regional Collaboratives and a National Strategy Team made up of partner organizations amplify successful approaches, address systemic challenges on a broader level, and ensure that proven solutions scale across states. Together, these components create a coherent, flexible system that strengthens existing climate services as well as our national climate response. Climate Ready America is underway in the southeast, with Navigators hosted by in-state partners serving frontline communities in Florida, Georgia, North Carolina, and South Carolina, and with Georgia soon to launch the first Climate Innovation Center. The Geos Institute and its partners are expanding the initiative across the Gulf states by placing Navigators in each Gulf state and leveraging their knowledge to build each Climate Innovation Center. This session will offer an overview of this system and show participants how they can become involved in this ambitious effort.	202A	3:45 PM	4:00 PM
Doorsteps, Dialogues and Design: Elevating Community Engagement for Complex Infrastructure Projects	Jennifer Greene	For decades, municipal governments across the United States have struggled to effectively communicate with residents about major infrastructure projects. These initiatives have extremely long timelines and high costs, and often reshape streets, utilities, drainage systems, mobility networks, and many other areas of public life. Historically, cities often relied on one-directional communication models that assumed residents would adapt to construction impacts once notices were posted or projects began. In this traditional paradigm, communication can feel episodic, technical, and reactive to a community member: a project would move from conception, to planning and construction with limited input from the community and few avenues for residents to understand timelines, impacts, design alternatives, or in some cases, the underlying need for the project. Over the last five years, the City of Mobile has worked to transform its communication culture — from minimal, infrequent, and siloed messaging to a comprehensive, community-driven public engagement framework centered on trust-building, transparency and proactive outreach. Through a combination of community-based meetings, media campaigns, targeted engagement with historically underserved communities, and old-fashioned door-to-door outreach, the City is working to reshape public expectations and set a new standard for participatory communication around infrastructure projects. This process has not only improved public understanding of complex design, engineering and construction issues, but it has also strengthened civic partnerships, reduced frustration in construction areas, empowered residents to guide some of the city's most transformative projects, and help solve some of its most persistent challenges. This presentation will provide insights into the organizational changes, messaging and meeting tools, cultural shifts, and on-the-ground tactics that are enabling breakthroughs in how government and community members interact around disruptive yet necessary infrastructure improvements.	106A	3:45 PM	4:00 PM

Title	Speakers	Description	Location	Starts	Ends
The Wulfert Bayous Habitat Restoration Design: Integrating Ecological Function, Decision-Based Design, and Stewardship to Enhance Resilience	Erin Hague	The Wulfert Bayous Bird Nesting Habitat Restoration Design Project at the J.N. "Ding" Darling National Wildlife Refuge in Sanibel Island, Florida, demonstrates how data-driven planning and cross-agency collaboration can maximize the ecological and societal benefits of Gulf restoration. Supported by the National Fish and Wildlife Foundation's Gulf Environmental Benefit Fund, this project advances restoration goals for bird species impacted by the 2010 Deepwater Horizon Oil Spill while enhancing hydrologic connectivity, biodiversity, and coastal resilience. The design integrates decision-focused analysis with ecological restoration to improve 39 acres of wetlands by restoring 23 acres of previously filled areas and enhancing 16 acres of existing mangroves. Restoration strategies include the creation of mangrove bird nesting islands with artificial platforms, predator deterrence features such as alligator basking areas, and diverse emergent marshes that support foraging and breeding success for focal species including the roseate spoonbill, reddish egret, and wood stork. These interventions are informed by empirical research on island morphology, vegetation selection, and predator management. Comprehensive hydrologic, geotechnical, and habitat assessments guide design decisions to ensure long-term functionality and resilience. The project's integrated design process exemplifies adaptive management by aligning engineering, ecological, and community objectives to achieve measurable outcomes for water quality improvement, storm surge attenuation, and species recovery. The initiative also incorporates community engagement and education through planned nature trails and observation areas that promote stewardship and reinforce the connection between Gulf communities and their natural systems. By combining scientific rigor with inclusive decision-making, the Wulfert Bayous project establishes a scalable model for Gulf Coast restoration that enhances ecosystem services, strengthens habitat connectivity, and supports sustainable land use within a changing coastal landscape. This project exemplifies how decision-focused, integrated design can unify restoration, management, and stewardship outcomes across the Gulf Coast.	201C	3:45 PM	4:00 PM
When Geology Meets Restoration: 25 Years of Texas Marsh Studies and Construction Lessons for Resilience	Juan Moya	Coastal tidal marshes along the Texas coast provide critical habitat, storm protection, and carbon sequestration. Substantial funding is being directed toward their restoration, yet many projects have struggled to achieve long-term sustainability. A key reason is that restoration often is disconnected with the geologic and geomorphological foundations upon which these marshes were originally established. This presentation offers a new perspective by demonstrating how the distribution, persistence, and resilience of Texas marshes are directly tied to their paleo-geomorphological origins. Drawing on 25 years of geological and geomorphological analysis, our research reveals that a significant portion of Texas marshes developed atop the Mermentau Alloformation, which is a distinctive channel-fill deposit that responded to the inundations connected to sea level rise. This finding shows that that marshes are not randomly scattered across bays and estuaries; rather, their sustainability is linked to specific paleo-landforms, depositional environments, and the hydric soils they created. These soils, formed under unique geomorphic conditions, continue to influence marsh migration, stability, and vulnerability to disappearance. Our analysis exposes a critical disconnect between current restoration practices and the natural processes that originally sustained marsh ecosystems. Many restoration projects, while well-intentioned, fail to account for the geomorphic and soil-driven conditions that determine whether a marsh can thrive. In 2016, our team restored 700 acres of marsh with a limited budget, earning the Texas Environmental Excellence Award, which was based on their geological-soil conditions and hydro-geomorphological connectivity. This project demonstrated that when restoration strategies are informed by geomorphology and soil science, they can achieve large-scale success even under resource constraints. The concepts learned can be used on other marsh restoration initiatives.	201A	3:45 PM	4:00 PM

Title	Speakers	Description	Location	Starts	Ends
Distribution Patterns of Midwater Fishes in the Gulf: Lessons Learned and New Directions	Rosanna Milligan	Deep-sea fishes (inhabiting >200 m depths) are important marine prey and predators that play key roles in ecosystem connectivity through their biotic (trophic) interactions and movement patterns. Within the water column, vertically migrating micronektonic fishes (c. 2 – 20 cm in length) are a key part of the active Biological Carbon Pump (BCP) and important prey for a wide variety of predators, including nocturnal predators feeding on migratory fishes near the ocean surface, deep-diving predators feeding in and around the deep-scattering layer (DSL) during the day, and demersal and benthopelagic predators that feed on pelagic fauna occurring close to the seafloor. Through the DEEPEND and DEEPEND|RESTORE research programs, we have shown strong changes in the fish assemblage along vertical (depth) gradients across the northern Gulf, as well as changes correlated with the Loop Current. We attribute these observations to the relative strength of vertical biotic and abiotic gradients in deep waters compared to the horizontal plane, but it is also likely that the details of these patterns are affected by intraspecific variability within the populations. Size structuring is well-established in pelagic ecosystems generally, with individual body size correlating strongly with swimming capability, prey detection, predator avoidance, and energy storage, and 'bigger-deeper' trends are commonly reported for both migratory and non-migratory fauna. Here, we summarize the influences of key drivers influencing midwater fish distributions of the northern Gulf and present some preliminary analyses of patterns in body size	106B	3:45 PM	4:00 PM
Utilizing high resolution lidar data to inform sediment budget creation for the Mississippi barrier islands	Scott Spurgeon	The United States Army Corps of Engineers (USACE) Mobile District has ongoing projects as part of the Mississippi Coastal Improvements Program (MsCIP) and coast-wide beach and dune projects. One of these projects was the restoration of Ship Island, a Mississippi barrier island that was devastated by Hurricanes Camille and Katrina, resulting in the disruption of littoral sediment transport in the system. The Mobile District, in collaboration with the National Park Service, placed over two million cubic yards of sediment and planted over 300,000 grass plugs across three years. Under MsCIP, long-term adaptive management requires detailed sediment budgets—in 2025 and 2030—that account for sediment volumes across the coastal zone. These sediment budgets are valuable in coastal research, planning, and engineering, as they account for all sediment sources, sinks, and transport values within a coastal system. The MsCIP long-term adaptive management requires that budgets verify the sand restoration volumes are adequate for enhancing sand supply to the littoral transport system to help maintain Ship Island. High-resolution, high-accuracy remotely sensed elevation data products from various federal partners were utilized to support this effort. The 23 datasets acquired from 1998 to 2025 along the Mississippi and Alabama barrier islands, each with varying extents of geospatial coverage, helped create the baseline and 5-year sediment budgets. These budgets, created using the Sediment Budget Analysis System (SBAS), aim to verify that the sand restoration volumes that were placed have maintained the barrier islands and enhanced natural littoral transport over time.	202B	3:45 PM	4:00 PM

Title	Speakers	Description	Location	Starts	Ends
Evaluation of Eastern oyster growth on artificial reefs in Tampa Bay, Florida	Kara Radabaugh	Oyster restoration efforts across the Gulf generally focus on the provision of hard surfaces needed for spat settlement in substrate-limited areas. Understanding the long-term efficacy of these substrates is important to guide future restoration efforts. This study monitored 16 artificial oyster reefs (1–14 years old) in Tampa Bay, Florida that were constructed from bagged shell, loose shell, or concrete oyster balls and compared their oyster populations to three natural oyster reefs. Live oyster density, shell height, gastropod predator density, reef elevation, burial by sediment, spat recruitment, water quality, and reef rugosity were monitored annually or biannually for two years. High-elevation reefs had significantly higher live oyster density, less sediment burial, and lower gastropod predator density. Oyster populations on low-elevation reefs were less dense but individuals were larger in size. Shell bags had higher oyster density and lower predator density compared to oyster reef balls. The results of this study support the placement of artificial substrates at a broad range of intertidal elevations. Artificial oyster reefs in the higher intertidal zone (with inundation frequency 54–70%) support higher numbers of oysters and are well positioned for long-term survival as they receive less sedimentation and are poised to remain at optimum inundation frequencies with rising sea-levels. However, oysters on low-elevation reefs (with inundation frequency >90%) reach larger sizes and are disproportionately important for water filtration and spat production. Locating artificial reefs at a variety of locations and elevations allows restoration practitioners to take precautions against future disturbances (e.g., salinity extremes, hurricanes, predation) that may cause localized mortality. Having a diverse array of oyster reefs within an estuary provides a safeguard for local spat production, repopulation, and regional resilience.	204A	3:45 PM	4:00 PM
Alabama Gulf Coast Resiliency Project: Sustainability, Full STEAMM Ahead	Jessica Sampley	The Alabama Gulf Coast Resiliency Project: Sustainability, Full STEAMM Ahead is a newly funded (via the Gulf Research Program) K–8 place-based education (PBE) initiative led by Gulf Shores City Schools (GSCS) that uses the Alabama Gulf Coast as a living laboratory to advance community resilience and environmental literacy through immersive, field-based learning. Over three years, the initiative will scale in scope and reach—focusing in Year 1 on GSCS students and teachers, expanding in Year 2 to train educators from neighboring under-resourced schools, and culminating in Year 3 with regional student participation and the launch of a Gulf Coast Sustainability Symposium for middle grades students and teachers. This project builds on GSCS's prior successes in place-based outdoor learning, dune and shoreline restoration, oyster gardening, environmental and marine science fieldwork, scuba/biking/sailing/kayaking for STEAMM learning, and workforce-aligned STEAMM pathways—expanding these efforts into a comprehensive, vertically aligned K–8 model. In-school and out-of-school instruction will be integrated through watershed monitoring, reef and shoreline restoration, renewable energy projects, and culturally grounded lessons in Indigenous coastal knowledge and civil rights history. Students will engage in inquiry-driven projects while teachers participate in field-based training, collaborative planning, and embedded coaching to ensure sustained impact and instructional excellence. The presentation will highlight our PBE framework, key partnerships, and enhanced resources—including water safety and scuba training, water quality testing tools, and sailing-based STEAMM instruction—and share lessons learned about implementation and scaling in high-poverty and rural districts. We'll also explore our strategies for increasing student agency, ensuring equity of access, and measuring impact on scientific literacy, stewardship identity, and civic engagement. By showcasing an Alabama Gulf-centered PBE initiative grounded in both innovation and local tradition, this session contributes to regional dialogue on how place-based learning can cultivate the next generation of environmental leaders prepared to protect and sustain the Gulf's ecological and cultural heritage.	203B	3:45 PM	4:00 PM

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Title	Speakers	Description	Location	Starts	Ends
Hybrid Resilience Infrastructure: Science-based Solutions for Nature and People	Moar Bezner	Hybrid infrastructure provides a science-based pathway for coastal communities to enhance preparedness, adapt to hazard exposure, and improve the quality of their land–water interface. By integrating nature-inclusive design (NID), breakwaters, seawalls, revetments, and shoreline protections can deliver dual benefits: structural performance and measurable ecological uplift. Dual-use hybrid infrastructure can address shoreline erosion, coastal flooding, and storm surges while enhancing marine biodiversity and ecosystem services. In this presentation, three case studies will be discussed, offering engineering, design, and ecological insights for coastal resilience projects. The goal of this presentation is to provide effective examples of how hybrid infrastructure can be applied to strengthen resilience throughout the Gulf of America's coastal communities. The three case studies are a hybrid living shoreline in Neptune, NJ, the Living Breakwaters project in Staten Island, NY, and a hybrid revetment in San Diego, CA. Hybrid Living Shoreline, Neptune, NJThe Hybrid Living Shoreline in Neptune (NJ) uses bio-enhanced articulated mattresses and marsh plantings to stabilize an eroding shoreline. In partnership with the local HOA and the American Littoral Society, the project reduces erosion and increases biodiversity. Monitoring shows improved stability and measurable ecological uplift, demonstrating the effectiveness of hybrid infrastructure for shoreline resilience.Living Breakwaters, Staten Island, NYThis large-scale project utilizes eco-engineered armor units to protect coastal communities from storm surges, while providing biological uplift. This project creates a blueprint for dual-use breakwaters, demonstrating how ecological design supports long-term community resilience and public awareness.Port of San Diego Coastal Protection, San Diego, CAA revetment project launched at the Port of San Diego to replace traditional riprap with eco-engineered units that bring ecology into the fold. This project demonstrates measurable uplift in biology and enhanced structural stability. These projects show how hybrid infrastructure can redefine coastal resilience and empower Gulf communities to adopt science-driven and ecosystem-positive infrastructure strategies for the future.	202A	4:00 PM	4:15 PM
Panel Discussion: Co-production of avian science to inform management of species, habitats and humans in the Gulf: successes and lessons learned	Auriel Fournier	Across the Gulf, and along its coast, hundreds of species of birds and millions of individuals migrate, winter and breed annually. To ensure their populations are sustained for centuries to come, active restoration and management of habitat and populations is required, and uncertainties remain as to what actions are best taken and in what context. In order to effectively address those uncertainties, research needs to be designed from the ground up by managers and decision makers as well as scientists. Over the past 10+ years there has been a growing community in avian conservation embracing and using the tools of co-production to design and complete work to directly inform uncertainties identified by land managers, engineers, biologists, prescribed fire practitioners and others. The co-production process ranges from co-learning, where participants exchange knowledge and adapt their perspectives, to shared decision-making. This session invites talks from projects that have approached different questions related to the management of birds, their habitats, and human disturbance of those habitats through a lens of co-production. By including a diverse set of projects, this session aims to highlight common strengths of the coproduction process as well as to identify project traits that are best suited for particular methods for engaging decision makers and end users of the work to become equal partners in designing and executing the studies.	201A	4:00 PM	5:00 PM

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Title	Speakers	Description	Location	Starts	Ends
Structuring Processes for Water Resource Management that Incorporate Multiple Values: The Economy, The Environment, and Communities	Alyssa Dausman	Every day, decision-makers face complex choices with far-reaching consequences for people, communities, natural resources, and the environment. These choices are even more challenging when there are multiple stakeholders involved or when there is uncertainty in what the outcomes of decisions might be. Structured Decision Making (SDM) is an objectives-oriented, transparent process that can support decision-makers by providing a framework for engaging stakeholders and incorporating defensible, science-based tools for evaluating the tradeoffs between choices. This talk will demonstrate how structured decision-making (SDM) can be utilized in water resource management to incorporate multiple values. This can support resource management in a way that acknowledges the multiple facets to water that affects the economy, the environment, and communities—all are important in decision making—and can be factored into processes that also incorporate the best available data, science, and information. Utilizing a structured and defined process, decision makers and stakeholders can deconstruct the heart of the problem, systematically identify “out of the box” and win-win solutions, address uncertainties that may be leading to indecision, and use robust tools for predicting outcomes. This process allows decision makers to identify the choices most likely to lead to positive outcomes for all concerns. Steps in SDM-PrOACT: Problem. Define the decision context or problem Objectives. Define fundamental objectives Alternatives. Identify alternatives Consequences. Conduct consequence analysis Tradeoffs. Evaluate and optimize tradeoffs Decide and take action. This step is still in the hands of the decision maker, but the consequences and tradeoffs are transparent This talk will draw upon an example from Louisiana where groundwater sustainability is key to industry, jobs, and communities. <figure> <figcaption>Adapted from Jean Fitts Cochrane</figcaption> </figure>	201C	4:00 PM	4:15 PM

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Title	Speakers	Description	Location	Starts	Ends
Assessing Recent Habitat Change in Beach, Dune, and Intertidal Environments Along the Louisiana Gulf Shoreline	Kimberly Thompson	Barrier islands are dynamic coastal landforms with changes that can be gradual — caused by relative sea-level rise, tides, and longshore currents — or rapid, from extreme tropical and extratropical storms. These systems provide valuable ecosystem services including storm protection for coastal communities, habitat for fish and wildlife, salinity regulation in estuaries, carbon sequestration, recreation, and tourism. Consequently, it is important that barrier islands are managed and monitored to ensure resiliency and to sustain ecosystem structure and function and services over time. The Barrier Island Comprehensive Monitoring (BICM) Program, developed by the Louisiana Coastal Protection and Restoration Authority, collects long-term spatial and temporal data on sediment characterization, topography, bathymetry, shoreline position and assessment, and habitat coverage and change. BICM habitat maps are produced using high-resolution orthoimagery, best available elevation data, and relevant restoration information. BICM habitat maps have been developed periodically from 1996 to 2021. BICM habitat maps delineate habitat into 15 classes based on geomorphology and vegetation cover (e.g., beach, dune, mangrove, estuarine emergent marsh, intertidal, scrub/shrub). Collectively, habitat and change maps provide landscape data for resource managers to evaluate the outcome of past restoration actions and highlight the need for future restoration actions. This poster will include results from the 2021 habitat mapping effort along with change from the 2015/2016 historical maps. This presentation will include snapshots of multiple restoration efforts along the coast (i.e., the Louisiana Outer Coast Restoration project for Caillou Lake Headlands, Cheniere Ronquille, Shell Island, and North Breton Island) along with impacts of Hurricane Ida (2021) along the Louisiana shoreline.	202B	4:00 PM	4:15 PM
The Impact of Reef Composition on Recovery of a Crassostrea virginica Reef	Kelsey Kuykendall	The eastern oyster, Crassostrea virginica, provides many ecosystem services including but not limited to building reef structures that serve as a major contributor to local, regional, and global carbonate budgets. To fill the role as a major contributor despite being a rapidly degrading resource, an oyster reef must maintain a positive feedback loop by the addition of shell from living oysters that, in death, create habitat that promotes larval recruitment and thus reef growth. If shell is broken down or removed at a rate higher than it is added, then a reef will enter a negative feedback loop and ultimately cease to exist. In 2016 a mortality event occurred in the western Mississippi Sound that provided the opportunity to monitor the status of reef recovery over an eight-year time frame. Here, we explore the changes in composition of one reef over time as a case study of a reef recovering from mass mortality and failed recruitment events. We also discuss current restoration efforts of the reef and their potential impact on reef health in the future. The presence of living oysters and the resultant boxes on a reef is a crucial component for reef recovery. Ultimately restoration and management efforts will need to include a shell budget to have long-term success measured by reef growth and addition of adult oysters to the population.	204A	4:00 PM	4:15 PM

Title	Speakers	Description	Location	Starts	Ends
The moon as an ecosystem driver in the open-ocean Gulf: a nighttime case study of the lanternfish Hygophum taaningi	Meta Hughes	The pelagic Gulf evokes imagery of sunlit blue waters filled with fast-swimming fishes. Yet during the night billions of mesopelagic animals migrate to the upper layers of the Gulf. The change in sunlight from day to night is a well understood and quantified driver of the migration of mesopelagic animals from deep waters at day to surface waters at night, a phenomenon known as diel vertical migration (DVM). However, mesopelagic animals do not always migrate at night suggesting a different driver for nighttime migration. An extensive dataset developed in the Gulf was used to provide a case study of nighttime pelagic dynamics. In the north Atlantic, the lanternfish Hygophum taaningi (Myctophidae) is reported to undertake lunar vertical migration (LVM), defined as migration during specific moon phases. Taking nighttime conditions one step further, we assess the effectiveness of modeled moon phase and moonlight to predict the vertical distribution and abundance of H. taaningi in the Gulf. Generalized additive models were used to investigate the relationship between H. taaningi abundance, moon phase, and moonlight from the surface to 1000 m. Results demonstrated LVM behavior in the open Gulf, with a strong response to both moon phase and moonlight in deeper mesopelagic models, and marginal responses to moon phase in epipelagic models. Overall, H. taaningi was found in deeper mesopelagic waters during new moon and crescent phases, with upward migration to epipelagic waters during half-moon through full moon phases. As global interest regarding mesopelagic fishes (especially the Myctophidae) grows, there is a greater need for accuracy in quantifying fish distributions and abundances. The LVM pattern demonstrated here for H. taaningi is unique from other LVM patterns found in ataxonomic studies and studies that focus on different species, indicating that improvement of pelagic ecosystem modelling requires more knowledge of species-specific vertical distribution patterns.	106B	4:00 PM	4:15 PM
Assessing the Progress of Deepwater Horizon Restoration: Process and Outcomes of the NRDA Trustee Council's second Programmatic Review	Nadia Martin	The Deepwater Horizon Natural Resource Trustee Council has committed to providing regular updates to the public regarding the Trustees' progress towards meeting the goals outlined in the 2016 Programmatic Restoration Plan and restoring for injuries associated with the 2010 oil spill. In November 2021, the Trustee Council released its first Programmatic Review of the landscape-scale restoration efforts underway in the Gulf of America and is preparing to release its second Programmatic Review this year. Since the 2021 Review, the Trustees have initiated planning or implementation of over 130 new restoration projects aimed at restoring habitats, living marine resources, and human uses of natural resources in the Gulf. The Trustees have aggregated new project data, compiled additional information to update metrics reported on in 2021, and evaluated monitoring data from the Data Integration, Visualization, Exploration, and Reporting (DIVER) system to share new insights into the Trustees' restoration progress. This talk will provide a summary of the approach the Trustees undertook to summarize and evaluate restoration progress; highlight key successes and challenges faced; and provide a review of the over 40 projects that have been completed since the 2021 Programmatic Review. This review will describe lessons learned, how the Trustees intend to build upon previous successes, and common themes across the projects.	201D	4:00 PM	4:15 PM

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Title	Speakers	Description	Location	Starts	Ends
Cultivating Aquaculture Awareness: Tools for Educators in a Digital Age	Emily Riewestahl	Even though over half of the seafood that we consume globally is farmed, aquaculture is still relatively unfamiliar to the general public compared to its land-based counterpart, agriculture. While there are many possible explanations for this disparity in public awareness between our food production industries, one of the biggest challenges is communicating fact-based information to the public in an accessible and engaging way. In this era of information overload and shrinking attention spans, reaching audiences with accurate, engaging, and actionable science-based messages is more challenging and more critical than ever. For informal and formal educators to address this aquaculture literacy gap, they need science-based resources to help the public understand how their seafood gets to their plate, how to safely select and prepare seafood, etc. The Southeast Aquaculture Communication Collaborative (SACC) is addressing this gap by developing a centralized, web-based resource hub designed to simplify access to aquaculture outreach materials for educators, extension professionals, and communicators across the Southeastern U.S. This initiative curates and amplifies fact-based content in a variety of formats, including lesson plans, videos, fact sheets, and more that were originally developed by Sea Grant programs, universities, and nonprofits. By aggregating these resources into a searchable online library, the project reduces barriers to aquaculture literacy and extends the impact of previously under-promoted materials. A key audience for this hub is informal and K–12 educators, who often face time constraints and limited support for developing lesson plans. The hub's intuitive design and curated content aim to make aquaculture education more accessible and efficient to implement. This presentation aligns with the session's focus on science communication tools and resources that meet people where they are at, which is often online. The presentation will include a live demo of the resource hub and a walk-through of how attendees can suggest new resources be added to the hub. The project exemplifies how digital tools can be used to fill crucial education gaps, promoting sustainable and healthy consumer choices. Notes: I would prefer a presentation format to demo the project, but could also do a poster session with the project description and a QR link to the website. I am a full-time Sea Grant employee and a graduate student, so feel free to categorize me how you feel is fit.	106A	4:00 PM	4:15 PM

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Title	Speakers	Description	Location	Starts	Ends
STEMMing The Tide: Empowering Youth to Address Coastal Climate Challenges in Alabama	Kate Hayden	This presentation highlights the progress of a 5-year study to utilize and assess a community of practice approach in designing an environmental justice and locally relevant curriculum that aligns directly with the Alabama State science and social studies standards. The curriculum will initially focus on 6th-8th grade students attending MCTS in Africatown. It can be expanded to include other at-risk schools in the Mobile district, summer camps and/or after-school programs. This curriculum utilizes best practices in early STEM pedagogy, service-learning, and a focused theme on the connections between the local environment, community, and individual health. Students from Africatown and surrounding communities in Mobile, Alabama will explore the impacts of years of environmental injustice and pollution in their neighborhoods. Specifically, they will learn how the quality of the local environment impacts human and community health and how current policies, climate change, and industrial pollution impact schools and neighborhoods. To contextualize in-class learning, students partner with community leaders and organizations to develop and participate in service projects funded by this grant aimed at revitalizing and restoring their neighborhoods, parks, and ecosystems. This model provides students with a sense of self-agency by empowering them to become agents of change while creating impactful learning interventions that allow students to achieve the state science and social studies standards. The culminating research and work done by students, teachers, and community partners is highlighted and shared with the broader community at this program's annual Alabama Youth Action for Sustainability Summit. Assessment strategies include the analysis of annual ALSDE report card data, pre/post student surveys each year, teacher reflections, and workshop participant feedback. Currently, at the start of year 3, the workshop participant feedback demonstrated a strong appreciation for the community of practice approach in curriculum design from both community agencies and teachers; science proficiency nearly doubled from year 1 (9.09%) to year 2 (17.19%); and teachers reported increased student engagement with the material as a result of project based learning.	203B	4:00 PM	4:15 PM
Synthesizing science through the Mississippi Based RESTORE Act Center of Excellence (MBRACE)	Kelly Darnell	This year marks 10 years since designation of the Mississippi Based RESTORE Act Center of Excellence (MBRACE) through the Centers of Excellence Research Grants Program in accordance with the RESTORE ACT. Over the past decade, MBRACE has made substantial investments in research to further the understanding of oyster reef sustainability and water quality in Mississippi and better inform state-led resource and restoration mangers. These investments are through MBRACE's Core Research Program, a long-term initiative to build on and expand monitoring, modeling, and mapping in the Mississippi Sound, and its Competitive Grants Program, where data and modeling complements work being completed through the Core Research Program. The structure of these funding programs lends itself to the development of large, synthetic outputs. In an effort to maximize the usability and impact of data collected over the past 10 years, MBRACE is undergoing an effort to synthesize data collected since its designation. Here, we share our framework, synthesis process and how these synthetic outputs can and are being used to advance the state of the knowledge for oyster reef sustainability and water quality in the northern Gulf.	201D	4:15 PM	4:30 PM

Title	Speakers	Description	Location	Starts	Ends
Encouraging Connection with Cryptic Species: Art, Science, and Stories of Gulf Coast Whales and Dolphins	Tommy Tucker	This talk reviews ways to invite current and potential stakeholders to connect with and learn about cryptic species in the Gulf through engagement with creative materials such as puppets, banners, and print-making at beaches, festivals, and other public gatherings. The designs of the creative materials are informed by the stories of individual marine mammals (and the life histories of the species as a whole) with a focus on stories that overlap with visitable locations along the Gulf coast as documented through marine mammal stranding records, historical whaling logbooks, local newspaper archives, first-hand accounts, and scientific publications. While all three tools can be used broadly, each method has its own strengths and constraints that complement telling compelling stories about individuals of a cryptic species. The regional, or local, connections that are made through stakeholder engagement with the materials are designed to empower people to feel in relation to the Gulf's cryptic species. This talk will provide an overview of relevant strengths and constraints for each method, lessons learned, results (loosely as measured by audience engagement and retention), take-away materials, and ways to affordably incorporate these methods into pre-existing or upcoming outreach campaigns.	106A	4:15 PM	4:30 PM
Cost-Benefit Analyses of Experimental Oyster Reef Restoration Strategies	Margaret Wheat	The Texas Parks and Wildlife Department (TPWD) typically conducts oyster reef restorations by placing "cultch" (shell or rock material) on degraded reef, thereby providing increased surface area for juvenile oyster settlement. However, in recent years, the cost of cultch material and placement has been increasing exponentially. In response, TPWD constructed several "experimental" sites to identify the most economically and ecologically effective approaches to oyster restoration. Restoration designs tested include using different (1) placement configurations—i.e. 'mounds' with significant vertical relief vs continuous, uniform 'flats' layers, (2) depths of cultch material in both 'mounds' and 'flats' configurations, and (3) spatial intervals using the 'mounds' configuration. The experimental treatments were monitored bi-annually using hydraulic oyster patent tongs to monitor oyster recruitment, growth, and survival. All designs tested resulted in increased oyster abundances, comparable or exceeding those of nearby natural reefs. Costs for each restoration strategy varied as a function of total volume of cultch required to cover the same spatial footprint. Here, we present the preliminary results of cost-benefit analyses to investigate the average output (in terms of production of juvenile, subadult, and adult oysters) per dollar spent for each respective approach. Our assessments suggest that layers placed using a smaller volume of cultch per unit area may result in more cost-effective production of oysters over the short-term, although they may not produce higher total abundances. Additional monitoring and analyses are needed to assess long-term restoration success as it relates to resiliency and 'spill-over' impacts to adjacent, unrestored reefs.	204A	4:15 PM	4:30 PM
Identifying Drivers of Medically Important Mosquito Populations via Drone-acquired Imagery Analysis Post-Hurricane Beryl(2024) in Harris County, Texas	Angela Zieba	Hurricane Beryl hit the greater Houston area in July 2024. This storm caused major rainfall and significant wind throughout the city, resulting in damage to the built environment. It occurred during peak mosquito season with active West Nile Virus transmission. There is currently limited knowledge on post-disaster drivers of medically important mosquitoes, and we believe this event provided an ideal opportunity to evaluate the impact of disaster related environmental changes on mosquito ecology. Using drone-acquired imagery post-disaster, we investigated the correlation between types of debris and mosquito composition and abundance across the City of Houston. Each location was surveyed once weekly over four weeks post-Hurricane Beryl and then monthly for 5 months. For each drone image, trap data was summarized and graphically represented pre- and post-storm event. Drone images were evaluated to characterize built environment and storm related debris. An analysis was conducted to determine drivers of medically important mosquito abundance. We identified non-organic debris, specifically children's pools and tires, as significant drivers of medically important mosquitos. We believe this study represents a proof-of-concept for using remote sensing to inform community-level abatement efforts to protect public health post natural disaster.	202B	4:15 PM	4:30 PM

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Title	Speakers	Description	Location	Starts	Ends
CANCELED TALK Using Uncertainty to Plan: A New Framework for Grand Bay Marsh Conservation	Ramin Familkhalili	Tidal marshes in the Grand Bay National Estuarine Research Reserve are critical ecosystems that provide storm surge protection and vital habitat. These marshes face significant threats from accelerating sea-level rise (SLR) and subsidence, making their long-term survival dependent on their ability to both maintain vertical sediment capital and migrate into adjacent low-lying uplands. Coastal managers need predictions of short- and long-term marsh conditions to effectively plan for intervention areas, land acquisition, and migration corridors. This is a primary challenge, as key uncertainties in SLR rates and current marsh elevations often produce divergent results, creating deep uncertainty for long-term conservation planning. This study applies a replicable probabilistic modeling approach to forecast changes in marsh coverage for the Grand Bay estuary. We employ the Sea Level Affecting Marsh Model (SLAMM), integrating these key uncertainties in both probabilistic SLR projections and high-resolution topobathymetric data (i.e., Digital Elevation Model, DEM). Our framework will analyze a representative subset of DEMs and SLR projections across multiple scenarios to the year 2100. The goal is to translate these probabilistic outputs into a "marsh fate classification map," a spatially explicit tool that identifies resilient core areas, vulnerable zones requiring intervention, and high-priority migration corridors. This presentation will introduce the probabilistic framework and its application to Grand Bay. This approach moves beyond single, deterministic predictions to reveal the complex, non-linear responses of the marsh to different sources of uncertainty. The resulting maps will provide an actionable, scientific tool for coastal managers to strategically prioritize land protection and restoration efforts, thereby enhancing the long-term sustainability of the Grand Bay ecosystem.	201C	4:15 PM	4:30 PM
The influence of shelf proximity on mesopelagic fish assemblages in the northern Gulf.	Bianca Ruiz	The oceanic Gulf is a unique ecoregion recognized for its diverse assemblage of mesopelagic fishes. These fishes, which exhibit specialized morphological traits and behaviors, play a crucial role in the region’s food web dynamics. While the Gulf is well studied in terms of mesopelagic diversity and abundance, there is a limited understanding of how these patterns change geographically, particularly in relation to the outer continental shelf. The oceanic rim, described here as a transitional zone over the upper slope (to 1000 - 1500 m water depth), provides an ecotone in which pelagic assemblages may vary from ‘typical’ open-ocean assemblages. This region is also an important one for economically valued predators (e.g., tunas), many of whom may rely on mesopelagic prey. This study investigates whether proximity to the shelf break influences the faunal composition, abundance, and diversity of mesopelagic fishes in the northern Gulf. Specimens were collected using a 10-m2 Multiple Opening/Closing Net and Environmental Sensing System at discrete-depth intervals twice a day. Stations were categorized into hypothesis groups (rim vs. offshore) based on abiotic factors such as distance to isobaths and bottom depth. A permutational multivariate analysis of variance (PERMANOVA+) was used to calculate dissimilarity between stations. Where significant differences occurred, Hill-Shannon diversity values and K-dominance curves were generated to assess species diversity and abundance distribution. Results revealed a statistical difference in assemblage structure between the classified rim and offshore stations, with generally higher diversity observed at the offshore stations and the disappearance of several deep-pelagic taxa at the rim stations that are dominant offshore, (e.g., Cyclothone obscura).	106B	4:15 PM	4:30 PM

Tuesday May 5, 2026

Title	Speakers	Description	Location	Starts	Ends
Brilliant Resilience: Using Nature Based Learning to Build Whole Person Resilience in Vulnerable Gulf Communities	Bruce Strouble	Youth across the Gulf South face compounding risks, extreme heat, stronger storms, flash flooding, and declining air and water quality, alongside everyday pressures like poverty, food insecurity, rising utility costs, along with political hostility and instability. Our session shows how a nature-based, place-based model closes the gap between “knowing” and “doing” while cultivating whole-person resilience. Students in high-exposure neighborhoods learn outdoors through focused field labs and local site visits, then translate observations into simple improvements and clear data stories for school and community decision-makers. Equally, we build the social-emotional skills that help youth withstand and adapt to stress, structured reflection, teamwork routines, peer leadership, and mentoring,so they can respond to psychological strain, environmental hazards, and economic burdens together. We introduce youth in high-exposure communities to the natural world and the everyday systems around them, then use place-based learning to connect environmental change with the social and economic challenges they already see. Across three six-week Saturday School sessions and a six-week Summer School on an HBCU campus, students learn in urban and natural settings, practice observation and simple measurement, and reflect on root causes. The curriculum builds environmental literacy alongside whole-person skills, communication, teamwork, problem framing, and resilience, so participants can name the challenges they face and imagine practical, future-focused solutions. Learning extends beyond the classroom through community-facing events where students share their work and contribute in visible ways. A Junior Counselor Mentoring track develops youth leaders who are environmentally aware and trained in core supports (mental-health first aid awareness, conflict mediation, basic first aid, and peer mentorship). Often a first paid role, the track adds job-readiness and college-prep enrichment, creating a leadership pipeline equipped to help implement the changes our community needs—safely, credibly, and with growing confidence. Attendees of this session will leave with insights for a ready-to-run, place-based model they can adopt next semester: a simple cadence, field-tested lab checklists and safety SOPs, a field-trip rubric that pairs built-environment sites with cultural anchors, and a plug-and-play Junior Counselor track to grow youth leaders. We will share our evaluation toolkit, along with summary results from Years 1–2. Participants can will benefit form our candid lessons learned on logistics, partnerships, and maintenance,and concrete refinements for next year so you can avoid friction and scale what works.	203B	4:15 PM	4:30 PM

Title	Speakers	Description	Location	Starts	Ends
Coastal Homeowner Handbook - Update on Enhancements and Social Media Marketing	Michael Christopher	Designed specifically for homeowners, the “Coastal Homeowner’s Handbook” is a critical resource for anyone wanting to reduce the risks to their family and property from natural hazards. The handbook covers essential information on emergency preparedness, evacuation planning, flood/wind insurance, and steps to protect life and property. The original set of Homeowner Handbooks were developed in 2010 as a project of the Gulf of Mexico Alliance (GOMA) Coastal Community Resilience (CCR) Team, a partnership of federal, state, and local organizations that share a vision for healthy and resilient communities. The handbooks were designed specifically for homeowners in the Gulf Coast states (Mississippi, Alabama, Louisiana, Texas, and Florida), to promote individual resilience; thereby creating a fortified community. The handbook covers essential information on emergency preparedness, evacuation planning, flood/wind insurance, and steps to protect life and property. In 2023, the “Homeowner Handbook” mobile application was developed to expand the reach and usability of the tool by incorporating mobile technology and taking advantage of the proliferation of smartphone use in the United States. According to data obtained in ongoing studies by Pew Research, a substantial majority of Americans are cellphone owners. In 2021, 85% of Americans owned smartphones. This represents a substantial, and still-growing, majority of citizens across a wide range of demographic groups. While smartphone ownership exhibits disparities based on age, household income, and educational attainment, the gaps are declining. Mobile technology use among rural adults and minorities has also risen rapidly, with the share of those owning smartphones increasing sharply since 2011. The development of the “Coastal Homeowner’s Handbook” mobile application provides a new opportunity to expand public access and assist in the preparation for and recovery from coastal disasters, along with the ability to monitor and assess usage of the tools. In 2025, the “Coastal Homeowner’s Handbook” mobile application was enhanced to include Spanish and Vietnamese language versions of the handbooks for Mississippi homeowners. Along with the introduction of new language versions of the handbook, a Social Media Marketing campaign was commissioned and implemented. The following tasks are being performed in the delivery of the campaign: Implement software frameworks for social media marketing Develop creatives and conduct a “Coastal Homeowner’s Handbook” social media awareness campaign on Facebook, Instagram, and Google for three months Implement monitoring and measurement tools for management of the social media awareness campaign In this session, we will provide an update on the “Coastal Homeowner’s Handbook” language options. We will also present an overview of the Social Media Marketing Campaign methodology and progress.	202A	4:15 PM	4:30 PM
Panel Discussion: Oyster Recruitment, Recovery, and Restoration	Evan Pettis	Panel discussion for the Oyster CoP: Managing Gulf oysters as a living resource through science and strategy session. This panel will answer questions on oyster recruitment, recovery, and restoration.	204A	4:30 PM	5:00 PM

Tuesday May 5, 2026

Title	Speakers	Description	Location	Starts	Ends
Storm Surge and Coastal Inundation Nowcasts/Forecasts During Hurricanes Helene and Milton	Yonggang Liu	A daily automated coastal water level (storm surge) nowcast/forecast guidance system has been developed by the USF Ocean Circulation Lab based on the West Florida Coastal Ocean Model (WFCOM) and the very high-resolution Tampa Bay Coastal Ocean Model (TBCOM). Both models are configured to perform realistic simulations of ocean circulation and water levels which are then combined with tide gauge observations to provide 3-day hindcasts and 3.5-day forecasts of coastal water level along the West Florida coast (http://ocl.marine.usf.edu/Models/SeaLevel/). The experimental product was maintained during the approach and passage of Hurricanes Helene and Milton, and provided critical storm surge forecasts to a broad suite of stakeholders including the public. The system successfully predicted the water level set-up and set-down along the west Florida coast three days in advance of each hurricane, with improved forecasts realized each day prior to landfall. The TBCOM-inundation forecast system was also activated during Hurricane Helene. This modeling system extends its dense grid onto the land, facilitating simulation of inundation and flooding associated with storm surge in coastal areas. During Hurricane Helene, areas of severe inundation were identified along the coastal periphery of Tampa Bay and forecasts were accessible two days in advance of landfall.	202A	4:30 PM	4:45 PM
Operationalizing Passive Acoustic Sensing to Characterize Noise Pollution and Inform Marine Conservation in the Gulf of America	Vanessa ZoBell	To understand underwater noise and biodiversity throughout the Gulf of America, we operationalized a distributed acoustic sensing system building on an initial decadal passive acoustic timeseries. The ocean-based sensing system, spanning five sites from 2010-2025 and eight additional sites from 2020-2025, enables continuous monitoring of ocean soundscapes critical to understanding biodiversity impacts and supporting marine resource management. Through iterative analysis and integration of complementary data streams, including Automatic Identification System data, Protected Species Observer reports, and seismic survey permit information, we identified commercial shipping and seismic airgun activity from geophysical surveys as the dominant driver of low-frequency noise across the Gulf. Airgun signals in particular propagate hundreds of kilometers from their source, contributing to some of the highest low-frequency ambient sound levels recorded in U.S. waters (up to 97 dB re 1 $\mu Pa^2/Hz$ at 40 Hz), exceeding levels observed off California and the U.S. East Coast. These elevated amplitudes overlap with communication frequencies used by marine species, underscoring conservation and management implications. Building on these findings, we are advancing partnerships to include both shipping and seismic airgun activity to characterize Gulf-wide acoustic patterns and quantify basin-scale noise contributions at unprecedented resolution. Our next phase focuses on evaluating the acoustic scale of different technologies, survey modalities, and operational practices to inform predictive sound models and noise-reduction strategies. Collectively, these efforts aim to support a realistic pathway for transforming long-term remote sensing data into actionable intelligence for agency operations to reduce noise impacts on vulnerable Gulf species.	202B	4:30 PM	4:45 PM

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Title	Speakers	Description	Location	Starts	Ends
Telling the story of how Chandeleur Island restoration sustains fisheries resources with synthesis of historic and new data	David Reeves	Chandeleur Island is one of the most renowned fishing destinations in the Gulf of America. Its expansive seagrass beds support a highly productive speckled trout fishery, and also provide important nursery and forage habitat for many other important fisheries species including red drum, tarpon, Gulf sturgeon, and gray snapper. Chandeleur Island and the associated seagrass meadows are rapidly eroding and projected to dramatically change in the coming years. The Louisiana and Open Ocean Trustee Implementation Groups anticipate allocating $247M to restore Chandeleur Island with an objective of protecting and enhancing the seagrass meadows and the associated ecosystem services. To characterize the fisheries benefits of this project, we developed a strategy to 1. estimate the amount of fisheries production attributable to project actions and 2. characterize how these benefits reach across the Gulf through trophic pathways and fish migration. Our approach leverages large-scale investments in data collection and modeling funded by the NOAA RESTORE Science Program, National Fish and Wildlife Foundation's Gulf Environmental Benefit Fund, and others. While existing data are quite extensive, some substantial gaps remain and future work is needed to characterize the system post-restoration. Therefore, we propose new data collection to supplement and extend historic data collection efforts, as well as the establishment of new time series. These data will be synthesized using a combination of ecosystem models, stable isotope models, and analysis of tagging data to clearly articulate the benefits of this ecosystem-level restoration project. At the time of writing, the Louisiana and Open Ocean Trustees are evaluating proposals to implement this work.	201D	4:30 PM	4:45 PM
Expanding deep-sea research using environmental DNA: DEEPEND|RESTORE efforts towards a reliable mitogenome reference database for open-ocean taxa	Pedro Augusto Peres	Species detection using environmental DNA (eDNA) is providing new capacity to monitor and characterize marine habitats, including deep-sea environments. The pelagic deep sea remains particularly challenging to investigate due to logistical constraints regarding access and collection of samples, making eDNA a promising tool for advancing our understanding of these ecosystems. However, incomplete reference libraries and the lack of vouchered specimens hamper the accuracy and reliability of eDNA-based studies. Here, we present collective efforts from the DEEPEND|RESTORE consortium to generate a regional mitogenome reference library for oceanic taxa and pelagic early life stages from the Gulf. Leveraging previous and ongoing sampling, we are sequencing, assembling, and annotating the mitogenomes of deep-pelagic fishes, crustaceans, and mollusks. All specimens were first identified by taxonomic experts, and sequenced specimens were vouchered in curated collections, ensuring traceability and long-term research value. This presentation will highlight current results of successfully assembled complete mitogenomes using a genome-skimming approach and discuss additional uses of the data beyond eDNA species detection. The resulting mitogenome reference database represents a valuable resource for researchers and management agencies seeking to monitor oceanic and pelagic early life stages of coastal taxa and implement eDNA as an additional tool in future analyses.	106B	4:30 PM	4:45 PM

Title	Speakers	Description	Location	Starts	Ends
Hydrodynamic and Ecological Modeling to Support Environmental Flow Management in the Atchafalaya Basin	Kevin Hanegan	At 895,000 acres, the Atchafalaya Basin is the nation's largest swamp wilderness, containing nationally significant expanses of forested wetlands. M&N is currently supporting The Nature Conservancy's (TNC) stewardship and ecosystem restoration efforts in the Atchafalaya Basin by developing a hydrodynamic model of the basin to accurately simulate the distribution of flows out of the Atchafalaya River into the surrounding floodplain through secondary channels and the regulation of backwater swamp inundation by vertical features (spoil banks, etc.). The Atchafalaya Basin Model is a high-resolution, flexible mesh hydrodynamic model with updated topo bathymetric sources that is calibrated to the latest hydrologic monitoring data, including United States Geological Survey (USGS) discharge measurements along secondary channels. A Cypress/Tupelo Swamp Ecology Module, modeled after the wetland morphology modules in the Louisiana Coastal Master Plan ICM, was also developed to model the impacts of varying Atchafalaya Basin flows and inundation extents/durations on cypress/tupelo germination, survival, and regeneration. Additional development extended model capabilities to include simulation of water quality proxies that capture the influence of stagnant water on ecological health. The Atchafalaya Basin Model and coupled ecology module are together used to examine regeneration potential under current hydrologic conditions and to characterize changes in suitability for fresh forested wetlands over time associated with different Atchafalaya Basin water management strategies. Since creation of the model, TNC has engaged in the Sustainable Rivers Program (SRP), where M&N model results have been instrumental in informing discussion and restoration planning. The Sustainable Rivers Program (SRP) is a national partnership between the U.S. Army Corps of Engineers (USACE) and TNC to improve the health and life of rivers by changing the operations of existing water management structures to restore and protect ecosystems, while maintaining or enhancing authorized uses and other project benefits. The Atchafalaya River was added to the SRP portfolio in 2020, prompting the identification of stakeholders, establishment of the stakeholder engagement process, and identification of hydrologic, hydrodynamic, and habitat models and other tools to help identify ecological opportunities within the Atchafalaya River Basin. In March 2025, an environmental flow (e-flow) development workshop was held to develop e-flow recommendations for the Old River Control Structure that could result in benefits to forest health, water quality (flow/exchange), and fish and crawfish habitats within the Atchafalaya Basin, culminating in combined recommendations for alternative flow management that could improve basin ecosystems.	201C	4:30 PM	4:45 PM
Underserved Communities Conduct Seagrass Restoration and Monitoring	Gary Raulerson	AMIkids firmly believes that young people, especially marginalized youth, can be active leaders in restoring the environments where they live. Seagrasses are an integral part of Tampa Bay, and their regeneration has been a focal point for multiple organizations within the Gulf and beyond. Improvement of water quality is the primary driver for regeneration of seagrass beds that were lost in the 20th century, but physical restoration in coordination with rigorous ecological monitoring and research can positively impact localized areas that have not recovered due to other limiting factors. With support from the Community Foundation of Tampa Bay (CFTB) and additional partners, AMIkids launched a hands-on seagrass restoration and monitoring initiative in Tampa Bay designed to give students meaningful opportunities to explore STEM careers, contribute to real scientific outcomes, and make a measurable impact on their local ecosystem. Initial instructional workshops were held daily from October 20-24, 2025 and provided a baseline of operational understanding for seagrass monitoring protocols. Students (including volunteers from corporate partners) conducted standardized seagrass monitoring in anticipation of future projects. Future restoration efforts are focused on areas that previously had seagrass present but have lost significant beds within the past 10 years, as well as locations with significant prop scarring. Scientifically appropriate monitoring and restoration of restored and control seagrass beds shall occur in 2026 and beyond.	203B	4:30 PM	4:45 PM

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Title	Speakers	Description	Location	Starts	Ends
The State of Alabama's Estuaries and Coast: an update on coastal Alabama's changing landscape and changing climate	Blair Morrison	The Mobile Bay watershed is the fourth largest river basin by volume in the United States; as such, the Bay serves as a dynamic transition zone where freshwater rivers mix with the tidal salt water of the Gulf of Mexico. The Mobile Bay National Estuary Program (MBNEP) is charged with protecting and restoring the water quality and ecological integrity of this estuary of national significance. As a part of this mission, the MBNEP is tasked with generating periodic 'State of the Bay' reports to provide a comprehensive assessment of the environmental health of Alabama's coast, focusing on Mobile Bay and the surrounding landscape. Since the last stand-alone report in 2008, the Program has been integrating years of research and new data to share. In a collaborative approach that included literature reviews, data requests, an interactive workshop, and an open comment period, the new State of Alabama's Estuaries and Coast report features work from numerous MBNEP management conference members, state and federal agencies, environmental consulting partners, and the NOAA RESTORE-funded Decadal Study team. The scope of the State of Alabama's Estuaries and Coast includes the vast network of uplands, wetlands and waterways that characterize lower Alabama. The document aims to illustrate the connections between and contributions of local tidal watersheds, Mobile Bay, and the broader Mobile Bay watershed. Program priorities and data analysis focus on critical elements such as water quality, land use change, community and environmental resilience, habitat health and diversity, fish and wildlife populations, heritage and culture, and access. Impacts on the coastal environment are highlighted, stressing the importance of community involvement and education in fostering sustainable stewardship of natural resources. In addition to status and trends in ecosystem health, the report also brings attention to local research, restoration, and conservation efforts that improve our understanding of the Bay and work to preserve our coastal way of life. This presentation will cover some highlights of the report, provide opportunities for digital downloads, and detail the next steps in sharing this information with our coastal communities and partners.	106A	4:30 PM	4:45 PM
Live Mapping of Oil Spills with Aerial Multispectral System	Oscar Garcia	Water Mapping, LLC has developed a state-of-the-art real-time mapping technology with multispectral sensors mounted on a manned aircraft for oil spill detection and characterization. This system has been tested and calibrated in controlled setting laboratories and demonstrated its operationalization over the Santa Barbara seeps in California. Our system consists on a set of multispectral sensors that record data on-board the aircraft's workstation and process mapping products seemingly in real time. By using Starlink connectivity data can be broadcasted live and shared with oil spill responders as the multispectral system detects floating oil layers of various thicknesses. This system offers a way to effectively deliver data for oil spill response planning and for tactical positioning of remediation operations. The multispectral array of 10 sensors includes channels covering wavelengths from UV to Infrared. The ability to operate this system at multiple altitudes facilitate covering large areas in short flight times.	202B	4:45 PM	5:00 PM

Tuesday May 5, 2026

Title	Speakers	Description	Location	Starts	Ends
Conflict Resolution/Avoidance via Stake Holder Engagement for Multiple use of Seabed for Coastal Restoration	Syed Khalil	Compatible sediment for coastal restoration is limited and with future increases in relative sea level rise and storm intensities, the quantity of sediment needed for sustainable ecosystem restoration in Louisiana will significantly increase. At the same time the accessibility, especially to the offshore sediment resources, will become more challenging. It is evident that restoration of coastal Louisiana under changing environmental conditions faces a two-pronged challenge: 1) restoration and protection projects must be robust enough (using adequate and suitable sediment) to counter varying future environmental scenarios; and 2) the quantity of sediment resources available for critical restoration projects is likely to decrease, rendering the dredging and utilization of the sediment resources more difficult and costly (Khalil et al, 2018). Louisiana Sediment Management Plan (LASMP) identifies and delineates potential sediment sources for restoration and provides a framework for managing sediment resources wisely, cost effectively, and in a systematic manner (Khalil et al., 2010). OCS sediment resources are thus very critical in fulfilling the States' commitment to implement the Coastal Master Plan. To fulfill its objective the State of Louisiana not only emphasizes on exploring new sediment sources but preserve and conserve these resources. One of the ways is to collaborate with state and federal agencies and oil and gas industry to remove decommissioned pipelines and avoid installation of new pipelines over significant sediment resources areas/ blocks. Although regulations mandate pipeline removal after decommissioning, historical noncompliance has left the seabed cluttered with abandoned infrastructure (Khalil et al., 2022). An important consideration in these programs is the evaluation and decision-making process related to the removal or waiver of removal of decommissioned pipelines in offshore and in state waters, ensuring that sediment access, environmental safety, and cost-effectiveness are balanced in long-term management strategies for multiple use of seabed. Effective management therefore depends on collaboration among stakeholders to balance resource development, sediment access, and the responsible decommissioning of obsolete facilities. Recognizing that the oil and gas industries also play a vital role in the state's economy, there is a clear need for a balanced approach that promotes coexistence. Considering the differing missions and objectives of each agency and stakeholder, federal and state partners have developed a structured process to address and resolve potential conflicts in a fair and equitable manner, as discussed in Khalil et al. (2022).	201C	4:45 PM	5:00 PM

Title	Speakers	Description	Location	Starts	Ends
Using Data Collection, Application, and Synthesis to Adaptively Manage Ecologically Meaningful Coastal Wetlands Restoration in Louisiana	Gabrielle Armin	In 2010, the Deepwater Horizon (DWH) oil spill released 3.19 million barrels of oil into the northern Gulf of America, severely impacting wetlands, coastal, and nearshore habitats (WCNH). Immediate response actions often exacerbated these impacts in an attempt to curb long-term oiling and remediate likely future ecosystem impacts. The negative effects were substantial in coastal Louisiana where heavy, persistent WCNH oiling was readily and repeatedly observed. The productive Louisiana WCNH support a wealth of ecologically, commercially, and recreationally important fish and water column invertebrates (FWCI). The DWH oil spill severely injured FWCI, leading to lethal and sublethal effects (e.g. decreased growth and reproduction), causing lost future productivity. As a result of the ecosystem-level injury, the DWH Trustees planned and are implementing a complex, integrated ecosystem approach to restore WCNH and other injured natural resources. The DWH programmatic restoration plan identified WCNH restoration to indirectly help restore FWCI relying on WCNH or benefitting from its productivity transferred to nearshore environs. Here, we discuss ongoing data collection, application, and synthesis efforts focusing on Louisiana monitoring and adaptive management (MAM) activities associated with quantifying FWCI benefits of WCNH restoration. Our current efforts take a holistic, ecosystem approach starting with outcome-focused construction of WCNH restoration projects. Restoration project-specific MAM complements additional monitoring and data collection associated with independent MAM projects; both are further complemented by existing monitoring data. Synthesis of these three data sources will be applied to evaluate restoration success and inform future WCNH restoration design. Further, data collection will support future broader syntheses that will evaluate and quantify project-specific and regional WCNH restoration benefits to FWCI via multiple lines of evidence.	201D	4:45 PM	5:00 PM
Removing Barriers for Place-based Marine Science Education	Jon Schmidt	Emerald & Forgotten Coast Adventures (E&FCA) is a 501(c)3 nonprofit that works with school districts in the Florida Panhandle to provide place-based marine science experiences for K-12th-grade students. Raising money to offset costs, E&FCA offers these trips to public and charter schools at no charge. To date, over 4,000 students and teachers have participated in the program, and continued growth is expected as teachers overwhelmingly support a program that provides hands-on experiences to reinforce their classroom studies. E&FCA has adapted its programs to evolve as the Florida Standards change and are modified, as schools grapple with limited bus-driver availability, and the usual challenges of bringing students into the field. Teachers, administrators, and School District staff have embraced the value of the efforts undertaken to teach students marine science conservation and ecology in the field, allowing E&FCA to grow in Bay and Walton Counties.	203B	4:45 PM	5:00 PM

Tuesday May 5, 2026

Title	Speakers	Description	Location	Starts	Ends
Closing the Evidence Gap: Nonprofit Interventions for Climate and Health	Nicole Perry	Environmental nonprofits are vital implementation partners for Gulf Coast resilience, yet little is known, and few studies rigorously document, how their environmental actions translate into community-health co-benefits across the region. This project uses a structured, three-round Delphi process (anonymous, iterative expert survey designed to build consensus) to synthesize 30 nonprofit leaders' judgments into actionable guidance. In Phase 1, panelists inventory organizational actions, community-engagement stages, climate-health threats, vulnerable subgroups, operational challenges, response strategies, evidence standards, resource needs, and partnership "wish-list" changes (open-ended prompts plus checklists). In Phase 2, the same panel rates these items on paired criteria to surface priorities and trade-offs: environmental impact vs. health co-benefit for actions; importance vs. difficulty for engagement stages; frequency vs. severity for threats; vulnerability vs. difficulty to reach for subgroups; and effectiveness vs. feasibility for strategies. Phase 2 also includes a matrix that maps strategies to challenge categories (funding, policy/bureaucracy, capacity, engagement/trust, infrastructure, monitoring/evaluation, and coordination) to highlight high-leverage matches. In Phase 3, panelists review group medians and revise scores, producing convergence on top-ranked interventions, consensus attributes of "effective" initiatives, credible yet feasible evidence practices, and "low-effort/high-impact" resources and policy shifts for the sector. Anticipated deliverables include: a ranked "what works" list of nonprofit actions with health co-benefits; a challenge-to-strategy crosswalk for small-to-mid-sized organizations; and consensus guidance on evidence standards and funder-ready resource priorities. This study will translate practitioner expertise into replicable recommendations for Gulf communities.	202A	4:45 PM	5:00 PM
Turning Curiosity into Conservation: Connecting People to the Coast Through Beachcombing	Jace Tunnell	In 2020, the onset of the COVID-19 pandemic disrupted traditional modes of science communication and public engagement, forcing educators and researchers to reimagine how to connect with audiences outside the classroom and laboratory. In response, the Beachcombing program was developed, a weekly video series designed to keep the public engaged with coastal and marine science during a time of restricted access to beaches and in-person events. The series highlights the diversity of natural and anthropogenic items washing ashore along the Gulf Coast, using each discovery as an entry point for discussing broader ecological processes and conservation issues. Since its inception, Beachcombing has evolved into a multifaceted science communication program that reaches audiences through multiple media platforms. In addition to weekly videos and educational social media posts, Beachcombing now includes a recurring National Public Radio segment, regular TV segments on the Public Broadcast System, weekly newspaper articles published in more than eight Texas outlets, and frequent engagement with traditional and digital media, averaging four interviews per week. The program also extends its impact through approximately 75 in-person presentations annually to schools, community organizations, and professional conferences. This presentation will examine the development and expansion of the Beachcombing program as a case study in adaptive, multimedia science communication. It will highlight strategies for sustaining engagement across diverse audiences, leveraging curiosity and storytelling to translate coastal science, and effectively "meeting audiences where they are" with messages that inspire stewardship of the Gulf Coast and its resources.	106A	4:45 PM	5:00 PM

Wednesday May 6, 2026

Title	Speaker	Description	Location	Starts	Ends
The Effects of Natural Disasters on Human Migration utilizing Network Metrics: Case Studies of Flood Exposure in Hurricanes Katrina-Rita, the 2	Thomas Douthat	Intorduction to the session and KeynoteSpeakers:Shenghua Wu, Associate Professor, Department of Civil, Coastal, and Environmental Engineering, University of South AlabamaJacquelyn Grace, Assistant Professor, Dept. of Ecology & Conservation Biology, Texas A&M UnivsityTerri Maness, Environmental Science Program Coordinator, School of Biological Sciences, Louisiana Tech University Micro and nanoplastics (collectively referred to as microplastics) are an emerging global challenge that threatens the health, resilience, and sustainability of coastal ecosystems. Nowhere is this issue more pressing than in the Gulf Coast, a region defined by its rich biodiversity, vital fisheries, dense coastal populations, and the nation's highest concentration of plastic manufacturing facilities. Despite growing awareness, our understanding of the scope, severity, and long-term impacts of microplastic pollution remains limited due to its inherently transdisciplinary nature. This session provides a platform for dialogue and collaboration among ecologists, engineers, chemists, physicists, oceanographers, social scientists, environmental educators, community collaborators, and policymakers. We invite presentations that examine the sources, concentrations, and ecological or human health effects of microplastics across marine, estuarine, and terrestrial systems in the Gulf region. Topics may include innovative technologies for mitigation and removal, such as cost-effective treatment systems, recycling and repurposing techniques, and the use of artificial intelligence for real-time monitoring and hotspot identification. Emphasizing environmental stewardship, this session also encourages contributions that explore the integration of science and management to inform decision-making and community action. By bridging disciplines and sectors, including academia, industry, and government, we aim to advance understanding of the Gulf's unique vulnerabilities and accelerate the development of practical, scalable solutions for reducing microplastic pollution. Through shared knowledge and collective effort, this symposium seeks to chart a path toward a cleaner, more resilient, and sustainable Gulf Coast	202A	10:30 AM	10:45 AM
How You Can Host an Exploratory Scenario Planning Workshop to Advance Health Solutions in an Era of Climate Uncertainty	Rebecca Marx	Extreme weather events such as heat waves and hurricanes are linked to adverse health outcomes, especially in overburdened Gulf Coast communities. Weather-related hazards pose significant risks to public health, and climate change amplifies the uncertainty surrounding them. To help Gulf Coast communities plan for the potential health and health system impacts of an uncertain climate future, we developed an Exploratory Scenario Planning (XSP) Workshop, workshop planning guide, and supporting data tool pre-populated with Gulf Coast climate and health data. We will take you through the ins-and-outs of how we adapted the traditional XSP method to create this replicable one-day workshop. We will also share lessons learned from piloting the workshop and the supporting data tool with partners in Florida and Mississippi. Best of all, you will learn how you can host a workshop yourself to support your community in driving toward health and health system solutions that will be responsive to multiple climate futures.	201C	10:30 AM	11:00 AM

Wednesday May 6, 2026

Title	Speaker	Description	Location	Starts	Ends
Cooperative Research and Monitoring Program for Fish Spawning Aggregations in the Gulf: Past, Present and Future	William Heyman	Many commercially and recreationally important fish species converge to reproduce in fish spawning aggregations (FSAs) at specific times and locations. FSAs are critical for fishery and ecosystem resilience, highly vulnerable to fishing, and understudied and largely unmanaged in the Gulf. To address FSA science and management, RESTORE Science funded a two-year cooperative project that supported regional workshops involving scientists, managers and fishers, identified knowledge gaps, produced technical and peer-reviewed publications, and synthesized existing information and data (see Fish Spawning Aggregations in the Gulf). The project recommended working with fishermen to identify, characterize and prioritize multi-species FSAs in the Gulf and create a network of instrumented, long-term monitoring stations at priority sites. The project further recommended a co-creative process to incorporate new understanding and monitoring data into stock assessment frameworks and ecosystem-based management strategies. RESTORE recently supported a new, 5-year project to implement recommendations from the first study. The project team is supported by an advisory group of technical experts, resource managers, and fishers. Together, we will prioritize potential FSA sites for further characterization, monitoring and modelling. Six high-priorty multi-species FSAs wil be selected as sentinel sites. Sentinel sites will be equipped with in-situ instrument bundles to collect biophysical time-series data and sampled bi-annually for evidence of spawning, with a study fleet of commercial vessels. We will update a large monitoring database, developed in the first RESTORE FSA study. These and other data will be used to develop an Ecological Niche Model (ENM) ensemble to track and understand spawning locations and seasonality over recent years and to project changes in phenology and habitat suitability into the future. Model outputs will in turn inform management considerations.	201B	10:30 AM	10:45 AM
A Framework for Compound Flood Modeling and Nature-Based Solutions to Develop Flood Hazard Tools and Enhance Coastal Resilience in Mobile Bay, AL	Hamed Moftakhari	The Gulf Coast has experienced increasingly severe flooding in recent decades, highlighting the need for robust, science-based flood management strategies. Accurate estimates of flood hazards, grounded in historical conditions and considering future projections, are essential for resilience planning. This study employs hydrodynamic modeling to simulate compound flooding in Mobile Bay, Alabama, using the SFINCS model forced by water levels (tide + storm surge), wind stress, rainfall, and river discharge. We analyze scenarios informed by stakeholder priorities, including historical tropical cyclones and synthetic compound events with defined return periods. Future conditions incorporate projected sea-level rise by 2050 and evaluate the effectiveness of various nature-based solutions in reducing flood risk. This presentation gives the “behind the scenes” technical background for generating inundation and hazard maps, forming part of the Cooperative Institute for Research on Hydrology (CIROH) project, “Assessing Nature-Based Solutions to Mitigate Flood Impacts and Enhance Resilience.” A series of talks from this project will address ecological implications, community engagement, and strategies for communicating these tools to end users.	204B	10:30 AM	10:45 AM

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Title	Speaker	Description	Location	Starts	Ends
Dynamic coastal change is influenced by ecological, geomorphic, and human interactions	Sara Zeigler	Geomorphological and ecological ('ecogeomorphic') characteristics of barrier islands and other coastal landforms are constantly changing as a function of wind, waves, water level fluctuations, vegetation succession, and sediment movement during both storms and quiescent periods. Although there is inherent dynamism to these landforms, relatively stable ecogeomorphic states (e.g., beaches, dune systems, wetlands) exist over ecologically relevant time scales for coastal environments and within individual ecosystems. However, experts predict that faster, more abrupt changes to these stable states are likely in the future, with significant ecological and socioeconomic consequences. Effective management of these systems will require an understanding of when and how coastal landforms might change, which will necessitate the integration of concepts from ecology, oceanography, geology, and sociology. Here, we synthesize existing knowledge on coastal evolution in the face of changing environmental trends. We recommend that the following themes are considered in analyses of coastal change: (i) humans act as modifiers of coastal landscapes and also decision-makers of whether coastal change is accepted or resisted; (ii) coastal landscapes are inherently resilient to storms and sea level rise with distinct geomorphological and ecological mechanisms; and (iii) transitions in coastal states occur as mechanisms of resilience fail, which have implications for land use and management. Our review identifies three key areas where progress could enhance the coastal community's ability to anticipate change: improved characterizations of the feedbacks between humans and the environment, broader understanding of the role of landscape-scale connectivity and diversity, and development of models that are capable of incorporating social, ecological and geomorphic processes. [Note to reviewers: this is a broad TED-style talk on the complexities of coastal landscape change and would serve well as a session introduction]	201A	10:30 AM	10:45 AM
The Gulf eDNA Network: Unifying Environmental DNA Research and Collaboration Across the Gulf	Yasmina Shah Esmaeili	Environmental DNA (eDNA) is transforming how we monitor and understand biodiversity across aquatic ecosystems. This innovative, non-invasive technology allows researchers and managers to detect species presence, track ecological changes, and inform conservation decisions across the Gulf of Mexico. Despite the rapid expansion of eDNA efforts, data remain fragmented across multiple institutions, projects, and repositories—limiting the potential for large-scale synthesis and coordinated action. The Gulf eDNA Network (GeN) was established to bridge this gap by connecting researchers, resource managers, and community partners across the Gulf region. With more than 100 members from academia, government agencies, NGOs, and private industry, GeN is building the foundation for a cohesive, transdisciplinary eDNA community. The network is conducting a comprehensive gap analysis to identify geographic, taxonomic, and methodological priorities, with the goal of advancing standardized protocols and collaborative research efforts. By centralizing eDNA datasets and fostering communication among diverse stakeholders, GeN will serve as both a data hub and professional network to enhance the visibility, accessibility, and impact of eDNA science in the Gulf. This presentation will provide an overview of ongoing network activities, highlight opportunities for collaboration, and showcase how coordinated eDNA research can strengthen biodiversity monitoring, resource management, and policy implementation across the Gulf.	202B	10:30 AM	10:45 AM

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Title	Speaker	Description	Location	Starts	Ends
Eight Years of Monitoring Shorebird Nesting Success in Alabama	Olivia Morpeth	We surveyed for and monitored nesting Snowy Plovers, American Oystercatchers, Least Terns, and Black Skimmers along mainland and barrier island beaches and nearshore islands during 2018-2025. Prior to 2018, there was limited information available on the breeding population sizes and reproductive success of shorebirds in Alabama. There were censuses conducted throughout the state, with the most recent in 2015; however, these data did not provide information on the numbers of nests or fledglings. Our first five years consisted largely of monitoring to collect baseline data on reproductive success. Most species had low productivityacross years, with causes of nest failure and chick loss including severe weather events and depredation. In 2023 we started implementing protective measures for nesting Snowy Plovers on Dauphin Island, which resulted in increased hatching success. While habitat loss, human disturbance, and depredation continue to be threats to nesting success, our monitoring efforts are leading towards the identification of management strategies that can help increase productivityfor these species of conservation concern.	204A	10:30 AM	10:45 AM
Interdisciplinary Place-Based Learning Opportunities in Higher Education	Vanessa van Heerden	Nurturing a sense of place is essential throughout all levels of the education continuum. This session explores how two higher education courses—Rural Communities and Cultures (an undergraduate service-learning seminar) and Environmental Communication (an undergraduate and graduate-level course)—integrate place-based education to deepen students' ecological literacy, communication skills, and civic engagement. Both courses situate learning in Louisiana's dynamic landscapes, inviting students to critically and creatively engage with the resilient communities that shape the Gulf region. Drawing from frameworks of nature place-based learning, service-learning, and communication literacies, we demonstrate how students cultivate a reflexive understanding of their relationship to place through writing, mapping, storytelling, and community partnerships. The honors seminar engages students in field experiences and service-learning projects with rural organizations, fostering awareness of community assets and cross-disciplinary literacies. The communication course uses GIS StoryMaps, visual storytelling, and narrative reflection to connect environmental science with lived experiences, translating research into meaningful stories of nature-society relationships. Together, these examples illustrate the versatility and impact of place-based pedagogy across disciplines in higher education. Participants will leave with adaptable models for integrating reflection, storytelling, and community engagement into their own courses or educational programs, demonstrating the power of learning in, with, from, and for the natural world.	203B	10:30 AM	10:45 AM
Characterizing hypoxia in the Mississippi Bight during the summer of 2025	Brian Dzwonkowski	Coastal shelf regions are experiencing more frequent and widespread hypoxia events, which represent an acute stress on ecosystem health and resiliency. Such events are fundamentally connected to eutrophication. However, aspects of the coupled physical-biogeochemical processes at play can vary by region and location. Here, hypoxia in the Mississippi Bight during summer of 2025 is investigated to better understand the mechanisms driving this regional phenomena. Time series data from a long-term mooring site reveal low dissolved oxygen conditions began as early as April with intermittent occurrences of hypoxia throughout the summer. Hydrographic surveys over a portion of the shelf were consistent with the time series data and showed that these low dissolved oxygen conditions were wide-spread. The early onset of hypoxia over the shelf was correlated with very high levels of local river discharge suggesting regional dissolved oxygen conditions are likely impacted by both Mississippi River water (i.e., remote source) as well as local watersheds (i.e., local sources). The hydrographic structure of the water column and the associated water flow velocity suggest that the relative contribution of these source waters may depend on physical transport and mixing events. The results of this study are expected to facilitate the development of more effective mitigation and adaptation strategies in response to current and predicted changes in coastal oceans.	201D	10:30 AM	10:45 AM

Title	Speaker	Description	Location	Starts	Ends
Seagrass Status and Trends 2030 report: Update and Next Steps	Patrick Biber	Seagrass Status and Trends (S&T) is a long-term ongoing project initiated by USGS (Larry Handley) in the late 1990s to map all seagrasses in the Gulf of Mexico (America). Two reports have been produced to date: (1) the 2007 Seagrass Status and Trends in the Northern Gulf of Mexico:1940-2002 and (2) an update in the 2020 - Seagrass Status and Trends in the Northern Gulf of Mexico: 2002-2017. These two reports synthesize mapping data collected under Tier I sampling protocols (remote sensing, ground-truthing) across all five Gulf states. Since 2017, progress towards developing an updated report to be released by 2030 has been ongoing. This S&T 2030 report will cover new mapping data collected between 2018 – 2027, as well as provide updates to any revised products and findings on trends in seagrass coverage within the various bays and estuaries. Within this region, up to 32 individual estuarine systems where seagrasses occur, as well as statewide summaries for Texas, Louisiana, Mississippi, Alabama, and Florida, will be reported on. Each estuarine system will have a detailed vignette that addresses current and historical extent and quality of seagrasses, seagrass mapping and monitoring, causes of change, restoration and enhancement activities, background information for the study area, and the methodology employed to analyze and document the historical trends and current status of seagrasses. The 2030 report will update a baseline providing over 40 years of seagrass inventory data showing coastal areas of the Gulf that have gained seagrass acreage while other areas have lost acreage over time. The purpose of this is to provide scientists, managers, and citizens with valuable updated baseline information on the status and trends of seagrasses in coastal waters of the Gulf of Mexico. The presentation will cover an overview of the proposed chapters in the 2030 S&T report, as well as example vignettes based on feedback from the Seagrass Community of Practice.	203A	10:30 AM	11:00 AM
Building and sustaining a distributed nutrient sensing network on the U.S. Gulf Coast	Beth Stauffer	The U.S. Gulf Coast is vulnerable to the impacts of increased nutrient runoff, from the annual dead zone off the Louisiana coast to toxic algal blooms that are transported to and then fueled by nutrients in Florida estuaries and even legacy pollution at a fertilizer spill site in Mississippi. Yet, monitoring for dissolved, inorganic nutrients is missing from many of the ongoing efforts and programs that track coastal water quality in the Gulf. Beginning in 2019 and funded by the U.S. EPA and NOAA with the Integrated Ocean Observing System, we have been working to build a collaborative, distributed network of high frequency nutrient sensing as part of ongoing monitoring programs. We now have partners in FL (Sanibel-Captiva Conservation Foundation, Mote Marine Lab), MS (Grand Bay NERR), LA (Louisiana Universities Marine Consortium, UL Lafayette LO-SPAT), and TX (University of Texas Marine Science Institute) all deploying sensors measuring dissolved nitrate (+ nitrite) and/or phosphate at approximately hourly intervals. Throughout the course of this project, we have learned lessons and established some best practices. For example, no one sensor works across all coastal ecosystems, and a robust process for matching site characteristics to sensor specifications is critical. In our network, there are currently 4 different sensors being used with the 6 partners. Continuing to collect validation data in the form of reference samples run via standard methods in an analytical lab is critical to testing new technologies in the initial stages of use. Challenges to integrating new technologies into widely-used monitoring platforms remains a challenge, and developer innovation in this space could make sensors more competitive. This presentation will dive deeper into what we have learned in building this collaborative network and, perhaps more importantly, start to discuss what it will take to sustain high frequency nutrient sensing Gulf-wide into the future.	202B	10:45 AM	11:00 AM

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Title	Speaker	Description	Location	Starts	Ends
Using passive samplers to characterize acute and chronic exposure of water column resources to PAHs following an oil spill	Daniel Hahn	The Mississippi Sound and Bight (MSB) is a rich and complex area of the northern Gulf impacted by multiple stressors. Much of the western portion of the MSB has oil extraction and production infrastructure, leading to numerous oil spills of various size occurring in recent decades , which can act as both acute and chronic stressors in the environment . The Natural Resource Damage Assessment (NRDA) process quantifies injuries to natural resources from spills and scales these injuries to projects that restore for the losses from the spill. Data collection efforts associated with a recent spill in the Pass a Loutre Wildlife Management Area highlight how silicone band passive sampling devices can be used to quantify contaminant exposures and associated injuries to water column resources resulting from oil releases. The passive samplers characterize time-integrated exposure to bioavailable PAHs (polycyclic aromatic hydrocarbons) in water that organisms experience as a result of an oil spill, versus traditional grab water sampling, which only provides a snapshot of total contaminant concentrations. Following the spill, the uptake of PAHs in passive samplers correlated with observed shoreline and sediment oiling, in addition to site hydrology. Data collected at adjacent reference sites during the incident highlight the direct increases in water column concentrations of PAHs resulting from acute releases of oil, and comparison with data from sites further away in the MSB help put into context the low-level chronic contaminants vs the acutely elevated PAHs during a spill. Water column resources exposed to the levels of PAHs measured during the spill are known to cause effects that range from direct mortality (e.g. early life stages) to sublethal effects.	201D	10:45 AM	11:00 AM
The Past, Present and Future of Place-Based Undergraduate Education at the USM Summer Field Program	Jessie Kastler	The Summer Field Program has seen a lot of changes since its launch in 1947 as an initiative of the Mississippi Academy of Sciences and the first activity of the Gulf Coast Research Laboratory (GCRL). The SFP is an immersive four-week academic experience that engages undergraduate and graduate students in hands-on, field- and lab-based learning across coastal and marine environments. Many students who enroll from the dozens of colleges and universities in Mississippi and beyond that are affiliated with the program, allowing them to earn credit at their home universities while studying at the GCRL. Students travel to field environments on beaches, in bayous, estuaries, salt marshes and sea grass beds across the northern Gulf to learn, explore, and prepare for their professional futures. Among the thousands of students who have taken a class over the decades are many prominent marine scientists and resource managers. During this session we will share key highlights from the program's history and describe some novel approaches introduced recently. We will discuss some of the High-Impact Practices our instructors incorporate, including field activities, place-based learning, collaboration, and reflection. We will also present results and observations from the 2025 classes. In addition, we will outline the need for longitudinal data collection to better understand the long-term experiences and impacts among the past participants, and explain how we plan to address that need. Finally, we will invite audience members who have taken an SFP course to connect with us so they can be included in this work.	203B	10:45 AM	11:00 AM

Title	Speaker	Description	Location	Starts	Ends
Characterizing biological inputs to coupled ecological models to evaluate coastal wetland resilience to compound flooding	Adam Siders	Coastal wetlands can serve as nature-based solutions (NBS) to mitigate the impacts of compound flooding from two or more co-occurring flood drivers (e.g., precipitation and storm surge), thereby promoting resilience and climate readiness. Successful NBS implementation requires scenario-based evaluations of changes in sea level, precipitation, and other aspects of the coastal landscape, and coordination among natural and social scientists, engineers, and local stakeholders. We evaluated NBS designs for tidal wetlands in Mobile Bay, AL using field-based vegetation surveys and coupled hydrodynamic models. Further, we conducted a systematic literature review to identify regional and species-specific data for model inputs, including peak aboveground biomass, elevation optima, and ranges for above- and belowground biomass and root:shoot for tidal wetlands throughout North America. Within Mobile Bay, biological variables, such as maximum plant biomass, differed both within and among sites and among dominant vegetation types by an order of magnitude. At the regional scale, substantial variation in biological variables, such as elevation minima/maxima, above- and belowground biomass, root:shoot, and salinity tolerances, was also apparent. Overall, this variation resulted in differences in modeling parameters, which has implications for inundation extent, depth, and velocity during compound flooding events, and provides insights into which NBS may be most effective at mitigating flood impacts. Overall, these efforts can improve restoration planning, strengthen process-based modeling, and provide better tools for decision-making, thereby supporting adaptive strategies for coastal ecosystems facing climate-driven challenges. This presentation is part of the Cooperative Institute for Research on Hydrology (CIROH) project titled “Assessing Nature-Based Solutions to Mitigate Flood Impacts and Enhance Resilience.”	204B	10:45 AM	11:00 AM
Community Narratives as Data: Using History Harvests to Inform Water Hazard Planning	Heather Stone	This session explores the critical role of social science in interdisciplinary efforts to understand and address the complex challenges posed by climate and coastal change to built and natural environments. As change occurs, social science research becomes more valuable in helping communities understand hazards, community vulnerability, and the decision-making process to respond to them. For example, what does a community say about the hazards they are experiencing and what they think is needed to combat them? And how can this knowledge be utilized to bolster what hydrologic and hydrodynamic modeling and risk assessments show about the real world or future predictions? In this presentation, we will review methods for capturing community knowledge through a social science research process known as a History Harvest, which is used to weave responses into planning and adaptation strategies for more holistic results. We will discuss how this process was used in a project implemented to study water hazards in Mobile, AL; Jackson, MS; and Acadiana, LA.	202A	10:45 AM	11:00 AM

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Title	Speaker	Description	Location	Starts	Ends
Landward migration of critical coastal wetland habitats in Tampa Bay, Florida	Kara Radabaugh	Coastal wetland plant zonation is driven by species-specific tolerances of several environmental parameters such as inundation, sulfide concentration, and salinity, as well as inter-specific competition. Rising sea levels and reduced frequency of cold events are driving mangrove expansion landward and northward in Florida, resulting in a substantial conversion of salt marsh habitat. The Critical Coastal Habitat Assessment is a long-term monitoring study that identified changes in elevation, plant species, soil composition, and water quality across nine permanent transects in Tampa Bay, Florida from 2014–2016 to 2023. During this period, mangroves expanded extensively into salt marsh and salt barren habitats, with the average individual mangrove zone length increasing significantly from 25.7 ± 18.9 m to 40.9 ± 28.2 m (paired t-test, t = -2.40, df = 12, p = 0.034), displacing previously dominant marsh species such as Juncus romerianus and Spartina patens. The width of salt barrens and salt marshes decreased as mangroves expanded inland and the landward migration of salt marshes was limited by the relatively steep slope to coastal upland habitat. Local sediment accretion rates (2.0 – 4.2 mm/yr) suggest a limited ability for Gulf Coast salt marsh habitats to keep pace with sea-level rise, and highlight the need for maintaining undeveloped, natural buffer zones at appropriate elevations upslope of coastal wetland habitats to allow for landward migration. Information gained from this study will inform appropriate and effective management responses to the accelerating loss of salt marsh habitat.	201A	10:45 AM	11:00 AM
Using Ecological Models to Identify Changes in Fish Spawning Aggregations in the Gulf in Response to Environmental Change	Brian Bartlett	Reef fishes that form fish spawning aggregations (FSAs), such as grouper and snapper, are threatened not only due to overfishing, but also by environmental stressors. While management strategies and measures may currently be effective at reducing the impacts of fishing pressure on FSAs, they may not remain effective in the future if FSA locations change due to warming or other environmental stressors. The Gulf of America, as home to several FSAs, is an important region for fisheries, and needs to be managed to minimize overexploitation of FSAs. To be successful at these goals, management needs to consider climate stressors, as these may result in declines or shifts in the location or timing of FSA formation. To gain a better understanding of environmental change on FSAs, projections for Nassau Grouper (Epinephelus striatus) spawning habitat suitability under various climate scenarios were performed. Additionally, work is underway investigating climate change impacts on FSAs in marine sanctuaries. Finally, we will soon begin modeling multi-species FSAs in the Gulf. First, a database of known FSAs will be assembled; then ecological niche modeling and larval dispersal projections for future trends under environmental change will be made. This will contribute to an understanding of how FSAs may be impacted by environmental change, and will provide deliverables such as FSA databases including population connectivity and identification of essential fish habitat. Additionally, future projections would provide insight into how existing fish habitats may decline or shift, as well as how environmental variability may alter connectivity. These products will then be conveyed to end users via workshops and advisory meetings, where they will be able to shift the way we monitor, assess and manage FSAs in the Gulf.	201B	10:45 AM	11:00 AM

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Title	Speaker	Description	Location	Starts	Ends
Contributions of beach erosion, storm surge, and predation to declining trends of Least Terns in coastal Mississippi	Abby Darrah	The man-made beaches of Harrison County, Mississippi, are an important area for breeding Least Terns, hosting the densest population in the northern Gulf. This area has historically held up to 6,300 breeding pairs, though this number has declined in recent decades. Despite a robust stewardship program initiated by National Audubon Society in 2014 aimed at protected breeding Least Terns from disturbance, populations have continued to decline since 2020. As of 2025, Least Terns had declined 61% since a peak of 1,918 pairs in 2020, and have declined by 47% since 2017. Identifying the causes of this decline will be critical to prioritizing management actions needed to halt or reverse this trend. There are multiple factors that likely contributed during this time frame, including habitat loss due to beach erosion, storm events resulting in colony overwash during peak breeding periods, and increases in predator pressure. Habitat availability has declined by 26% since 2017, with most of the beach loss occurring between 2023 and 2024. Low breeding productivity (<0.40 fledglings/pair) has been documented in seven of the last nine years, with no or negligible productivity in the three years in which Mississippi was hit by tropical cyclones in June. Population modeling will be the next step in order to assess the relative importance of habitat loss and low productivity to the observed population decline. This will allow conservation practitioners to predict the effectiveness of new habitat creation versus predation management of existing habitat in conserving the mainland Mississippi Least Tern population.	204A	10:45 AM	11:00 AM
Connecting Currents: Evaluating Multidisciplinary Ocean Science Learning for Graduate and Undergraduate Students' Career Awareness and Readiness	Andria Miller	At Jackson State University, the Ocean Explorers Club (OEC) serves as a student-driven model for advancing transdisciplinary ocean science engagement among undergraduate and graduate students. By bringing together students from a broad range of academic backgrounds, the OEC creates opportunities for collaboration across majors such as biology, engineering, earth system science, public health, and the arts, fostering curiosity and awareness of environmental challenges. The program includes hands-on field trips, research seminars, internships, and professional development workshops designed to build technical skills, confidence, and career awareness. A mixed-methods research design was used to evaluate the effectiveness of these experiences, incorporating pre- and post-surveys to measure changes in knowledge, self-efficacy, and interest in ocean careers, alongside testimonies that document personal growth and barriers encountered. This model demonstrates how culturally responsive, student-centered programming can broaden participation and prepare a more inclusive future STEM workforce, with preliminary results showing a 60% increase in interest in ocean and marine science careers.	203B	11:00 AM	11:15 AM

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Title	Speaker	Description	Location	Starts	Ends
Using Scenario Planning to Address the Health and Health System Risks of Extreme Heat and Hurricanes	Rebecca Marx	Stakeholders in Jackson, MS and Bay County, FL engaged in one-day exploratory scenario planning workshops giving them views into several plausible futures under different climate and economic conditions. In Jackson, MS (as in most of the Gulf Coast) summer heat is a recurring problem. Extreme heat days and heatwaves are starting sooner and lasting longer into the fall. Heat-related illnesses exacerbate underlying health conditions such as heart disease and high blood pressure but are an undercounted comorbidity and cause of death—hence, heat is sometimes referred to as “the silent killer”. Heat causes fainting, headaches, dehydration, skin irritation, and mental agitation. It makes people want to avoid going outside and can be disruptive to normal routines like going to work, social events, and to the store. Poor housing quality, deteriorating water infrastructure, low incomes, and low insurance coverage already make it difficult to stay cool, hydrated, and healthy in Jackson during extreme heat. And climate change will make it worse. But how much worse? In Bay County, FL, Hurricane Michael rapidly intensified from a Category 2 to a Category 5 storm the day before it made landfall leaving little or no time to evacuate. Homes, schools, grocery stores, and healthcare facilities were damaged or destroyed. Two main hospitals in Bay County sustained substantial damage. One operated without water and with only partial electricity. Providers could not access health records, and some hospitals were unable to reach emergency response contacts to request support. Today, Bay County residents still suffer from Michael’s impact. Debris and loose insulation combined with mold from water damage have spawned respiratory issues in residents. Meanwhile, there is a huge dearth of medical providers in Bay County as many moved away after suffering trauma, burnout, or losing their homes or workplaces. What happens when a hurricane with the power and breadth of Michael strikes again? Learn how Jackson and Bay County stakeholders used exploratory scenario planning to prepare their communities and health systems for a range of possible futures.	201C	11:00 AM	11:15 AM

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Title	Speaker	Description	Location	Starts	Ends
Mapping SAV habitats across Coastal Alabama	Dorothy Byron	A vital component of the Mobile Bay system is the submerged aquatic vegetation (SAV) beds found in the shallow waters throughout the Mobile-Tensaw Delta and coastal Alabama. Healthy SAV habitats play a critical role in the ecological and environmental health of shallow coastal waters by providing food, shelter, and nursery habitat for a variety of ecologically and commercially important invertebrates, fishes, and waterfowl. They play an active role in maintaining good water clarity and reduce turbidity and healthy SAV beds decrease wave action, reducing shoreline erosion. Despite its provision of many valuable ecosystem services, SAV is declining globally and areal declines in states bordering the Gulf of Mexico range from 20-100% (Handley et al. 2007). In Alabama coastal waters, historical records are sparse, with the majority of records occurring within the past 20 years (see Vittor 2002, 2009, 2015, 2019). And while there has been an increase in spatial extent of SAV in recent years (Vittor 2019), tremendous losses have also occurred, with more than 50% of SAV lost from Mobile Bay since 1981 (USGS 2004). Many factors, both natural and anthropogenic, contribute to SAV decline, including tropical storms, abnormal rainfall patterns, direct damage caused by poor boating practices, dredging and coastal construction, and the addition of wastewater and excess nutrients to coastal waters. Plant communities at the receiving end of riverine systems may experience the greatest loss, as poor land management practices that increase runoff degrade water quality by increasing deposition of nutrients, sediments, and dissolved organic matter. Additionally, non-native species have become established in the Mobile-Tensaw Delta and add to the complexity of the system. Areas that were once monospecies beds have become mixed with multiple species competing for resources, but these areas change over times as plant communities wax and wane over years depending on salinity, flow, tropical disturbances and competitive growth. Here we will discuss options for best mapping and monitoring practices: mid-resolution (1m pixel resolution) and high resolution (30 cm pixel resolution) aerial imagery with satellite imagery provide by Planet (3 m pixel resolution), as well as introduce a novel in-water sampling technique for annual species abundance and composition sampling in shallow deltaic regions where water clarity is limiting.	203A	11:00 AM	11:15 AM

Title	Speaker	Description	Location	Starts	Ends
User-Driven Compound Flood Modeling for Coastal Resilience	Larisa Lee	Project co-development with intended users is increasingly common in flood risk modeling. This presentation details the end-user engagement approach informing an ongoing compound flood modeling project in Mobile Bay, Alabama. The project aims to develop coupled hydrodynamic and hydrologic models and evaluate the effectiveness of resilience strategies, particularly Nature-Based Solutions (NBS), in reducing compound flooding and improving overall watershed resilience. An important project outcome is to deliver actionable guidance that coastal decision-makers can use in project implementation, policy development, and watershed management planning. A collaborative engagement process is central to ensuring project outputs align with practical needs. The project team has held virtual meetings, in-person workshops and one-on-one meetings with local decision-makers. The first workshop was designed to present the project's goals and objectives and gathered input on local planning priorities. Participants provided feedback on the e types of outputs and products most beneficial for management and planning. The project team also gathered information about flood hotspots and ideal locations to implement NBS. During the second workshop, the project team collected detailed feedback on the performance of preliminary compound flood models and gathered input on appropriate success criteria for NBS projects. Ongoing virtual meetings provided opportunities to share project updates and gather timely feedback to course-correct when needed. This presentation will describe how engagement feedback has shaped the modeling effort to date, highlighting the critical role of end-users' lived experience in shaping modeling efforts. This presentation is part of the Cooperative Institute for Research on Hydrology (CIROH) project titled "Assessing Nature-Based Solutions to Mitigate Flood Impacts and Enhance Resilience."	204B	11:00 AM	11:15 AM
Native Plant Producer Network: Building Community for Coastal Restoration	Kaitlyn Mitchell	Salt marshes are important for maintaining healthy and resilient coastal ecosystems as they remove nutrients, buffer storm surge, sequester carbon, control erosion, and provide habitat for wildlife. To combat erosion, shorelines have become increasingly 'hardened' over time through the construction of structures like bulkheads and seawalls. Alternatively, 'living shorelines' have been implemented as a nature-based solution that supports biodiversity, improves water quality, and are suited to handle long-term environmental conditions that cause hardened structures to fail within a few decades. One of the barriers to implementing living shorelines is the acquisition of sufficient plant materials and a trained workforce needed for marsh restoration work. Two commonly used species that dominate salt marshes on the Gulf coast, are Spartina alterniflora (smooth cordgrass) and Juncus roemarianus (black needlerush). Marsh plants purchased for use along the Gulf are shipped as 'plugs' (small seedlings) and sourced from nurseries in Florida and Louisiana, with no large-scale nurseries that offer these species in coastal Mississippi. In 2024, the Mississippi State University Coastal Research and Extension Center has developed the Native Plant Producer Network (NPPN), a program aimed at increasing the stock of locally sourced wetland plants for use in small-scale restoration projects while simultaneously providing hands-on training, assistance, and networking opportunities to students, producers, and the public. To date, the project team has begun partnerships with three demonstration sites, eleven at-home growers, and nine local schools in Mississippi and Alabama. The NPPN team has participated in education outreach events reaching over 3,000 individuals, provided plants for small-scale restoration projects, is developing education materials for the public, conducting research, and planning more workshops aimed at recruiting new producers across the Gulf Coast to grow native wetland plants.	202A	11:00 AM	11:15 AM

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Title	Speaker	Description	Location	Starts	Ends
Collaborative monitoring of fish aggregations – an example from the South Atlantic and opportunities in the Gulf	Mary Conley	Multiple species of reef fish converge at predictable locations and times to reproduce. Fish spawning aggregations (FSAs) are key to healthy fish populations. While gathering reproductive-aged fish in relatively small areas makes spawning more efficient, it also makes the fish more vulnerable. Fishing in these areas can disrupt spawning behavior and have an outsized effect on the future population. Efforts are underway to engage fishermen, scientists and managers to further characterize and monitor fish spawning activity in the South Atlantic and Gulf. This presentation will discuss the process and outcomes from a cooperative monitoring effort in the South Atlantic designed to evaluate existing Spawning Special Management Zones (SSMZs) and introduce upcoming opportunities in the Gulf to engage fishermen in the identification and monitoring of FSAs. In 2017, the South Atlantic Fishery Management Council (SAFMC) established five SSMZs to protect fish spawning based on local fishermen knowledge, oceanographic characteristics, and existing research. Two artificial-reef SSMZs were protected permanently, while the three natural areas were protected for 10 years, pending further data collection. As of 2023, limited monitoring had occurred, leaving a data gap as Council members consider whether to continue protection beyond 2027. In response, a team came together to conduct two cooperative research monitoring trips at each of the three natural-bottom SSMZs. During these trips, local fishermen and scientists used hook-and-line sampling and underwater video to collect 371 snapper/grouper samples and dozens of hours of underwater video footage. The findings confirmed the presence and spawning of priority species in all three SSMZs. Key to the spawning area work in the South Atlantic has been engaging the fishing community, managers and scientists throughout the process. Efforts are underway to further this collaboration around FSAs in the Gulf. With support from NOAA’s RESTORE Science Program, a cooperative research and management project is underway with multiple opportunities for engagement from participation on the advisory group to training for participation in a study fleet.	201B	11:00 AM	11:15 AM

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Title	Speaker	Description	Location	Starts	Ends
Factors Affecting Loss of Nesting Habitat on Waterbird Rookery Islands in Texas	Dale Gawlik	There are over 300 coastal islands in Texas that collectively provide nesting habitat for >250,000 colonial waterbirds. Most of these islands were created as a by-product of dredging the Intracoastal Waterway, which was completed in 1949. Since then, islands have been eroding, potentially limiting waterbird nesting populations. Managers are responding by putting large sums of money into rehabilitating the islands. However, there is uncertainty in how fast the amounts of different nesting substrate types (vegetated and unvegetated) are changing and in the factors that are affecting the rates of change. Therefore, we digitized aerial imagery of 213 islands along the Texas coast south of Aransas Pass, Texas, for the years 1995, 2008, 2012, and 2018 to estimate changes in rookery island area and area of bare and vegetated substrates. During the 23 years of our study, 23 of the 213 study islands were completely submerged. Overall, islands lost emergent substrate at a median annual rate of 2.2% (IQR = 4.8%). Islands lost bare substrate at a median annual rate of 3.0% (IQR = 2.0%) per year, and they lost vegetated substrate at a rate of 1.9% (IQR = 3.3%) per year. For a subset of 183 islands for which we had a complete set of covariates, we analyzed their effects on the rate of habitat changes. Nesting habitat loss was highest for small islands, islands with low elevation, and those with a low percentage of vegetated cover. The location of an island in the landscape also affected rate of habitat loss, with islands located close to navigation channels and those with a long fetch to the northwest or southeast having the highest rates. We were not surprised to find that bare substrate, typically sand and shell, was lost at a higher rate than was vegetated habitat because bare substrate tends to be an early successional stage of an island, often close to the waterline. Further, we hypothesized that the bare substrate loss could be partially the result of vegetation succession; however, the net loss of vegetated substrate does not support this hypothesis. If habitat loss continues at, or above, the observed rates, many islands will be submerged in the next few decades, underscoring the urgent need for rookery island restoration to sustain colonial waterbird populations in Texas.	204A	11:00 AM	11:15 AM
Wetland Loss, Dredged Canals, Legacy and Restoration	Gene Turner	Dredged canals create indirect factors causing wetland loss. These factors include longer intervals of both wetland soil waterlogging and drying, sulfide toxicity, less organic matter and sediment accumulation, and greater shoreline erosion. There is a robust dose-response relationship between coastal land loss and canal density in the Mississippi and Niger river deltas over 5 decades. Importantly, the ratio of land loss:canal area increases with time – a legacy effect. Neither subsidence nor flood protection levees on the main river channel significantly magnify the effect of dredging on wetland loss. These consequences are contrary to a hypothesis that regional river channel flood protection levees or fluid withdrawal is of greater importance than the local changes in wetland hydrology. The cumulative effect of these direct and indirect dredging consequences in coastal Louisiana is enormous and continuing, equaling many tens of billions of dollars annually. Wetland restoration/mitigation of dredging impacts has been tried successfully but sparsely. Restoration of dredged wetlands can be implemented at a relatively low cost (less than 1/10th the cost per acre of alternatives) and quickly if this paradigm of the causes of coastal wetland losses is adopted.	201A	11:00 AM	11:15 AM

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Title	Speaker	Description	Location	Starts	Ends
From Discovery to Stewardship: FLRACEP RFP V Research in the De Soto Canyon and Northeastern West Florida Shell	Kristin Erickson	In 2025, the Florida RESTORE Act Centers of Excellence Program (FLRACEP), administered by the Florida Institute of Oceanography (FIO), awarded over $4 million to four multidisciplinary teams to address critical research gaps in the De Soto Canyon and adjacent West Florida Shelf and escarpment. Ecosystems that play a central role in Gulf productivity yet remain poorly characterized. These projects directly integrate physical, biological, and technological methods that help us to understand how complex bathymetry, water-column dynamics, and habitat structure influence biodiversity and ecosystem function. Together, the studies will generate important new insights into mesophotic coral connectivity, deep-sea fish community dynamics, the behavior and prey fields of the endangered Rice's whale, and the influence of upwelling and riverine inputs on midwater productivity. Using autonomous technologies, passive and active acoustics, and advanced ocean circulation models, researchers will address long-standing data gaps while improving near-real-time monitoring capabilities. The resulting data and syntheses will directly inform management and conservation strategies; advancing ecosystem-based approaches to fisheries management, refining protected species assessments, and improving predictive models that support dynamic decision-making in a changing climate. By combining research with applications, FLRACEP RFP V exemplifies how directed Gulf science, leads to discovery, and translates into stewardship. This presentation will highlight how the FLRACEP RFP V exemplifies collaborative, co-produced science that connects research, technology, and resource management to improve understanding and stewardship of the De Soto Canyon and the northeastern Gulf ecosystems.	202B	11:00 AM	11:15 AM
The benthic footprint in 2010 of the 2004 Taylor Energy Mississippi Canyon 20 (MC-20) oil spill	Paul Montagna	In 2004, the Taylor Energy production platform in Mississippi Canyon 20 (MC-20) was toppled by a mud slide during Hurricane Ivan and 25 of 28 oil wells were damaged. Oil sheens persisted until a containment system was put in place in 2019. In 2010, the Deepwater Horizon (DWH) blowout occurred in much deeper water about 60.5 km (37.6 mi) from the MC-20 site. Benthic sampling for macrofauna occurred throughout the Gulf in fall 2010, but stations from shallow water depths and west of the blowout site, which were near MC-20, were never analyzed. Here, 47 archived sediment samples collected from 14 stations within 24 km of the MC-20 site have been analyzed for benthic abundance, biomass, and diversity to determine if impacts from the MC-20 spill could be identified and distinguished from DWH impacts.	201D	11:00 AM	11:15 AM

Title	Speaker	Description	Location	Starts	Ends
Dune vegetation recovery, restoration, and resilience after multiple hurricanes in Southwest Florida	Jeannine Richards	Dune vegetation is an essential component of coastal landscape resilience, yet the ability of dune plants to withstand and recover from the impacts of storms remains loosely quantified. This is especially true along the subtropical coast of Southwest Florida, where significant hurricane impacts from Ian, Idalia, Debby, Helene, and Milton have challenged vegetation resilience. Using a combination of ground surveys and remote sensing, we documented natural plant recovery and revegetation efforts following the most recent storm, Hurricane Milton. We also quantify sand accumulation and retention with and without vegetation using field-based measures, lidar, and modelling. Results from initial monitoring of natural vegetation recovery show that species responded differently to storm events in terms of survival and regrowth, with some species nearly absent on post-hurricane beaches while others recovered rapidly. Restoration planting accelerated recovery in terms of total vegetation cover. We also saw large differences in sand accretion among different species, with beach elder (Iva imbricata) and sea oats (Uniola paniculata) building significantly higher embryo dunes. Plants of any species accreted almost five times as much sand as bare sand control sites, and accretion was especially active during the height of the local dry season. In general, inter-storm sand accumulations in post-Ian sediment cores taken in Southwest Florida dunes are on the order of ~10 cm/yr, which is believed to be driven by vegetation. Modeling results and lidar data further support the importance of vegetation in both dune development and resistance to erosion. While natural revegetation does occur following devastating hurricanes, restoration paired with beach renourishment can speed up the process and help to maintain coastal resilience in hurricane-prone regions. Working with federal, state, county, and municipal partners, the goal of this work is to develop a quantitative framework to assess future resilience and develop restoration strategies that benefit managers and coastal communities.	201A	11:15 AM	11:30 AM
Spatial Patterns in Seagrass Reproductive Effort at the Chandeleur Islands, Louisiana	Caitlin M. Young	Seagrasses are in global decline calling for increased research on the ecology and resilience of local populations. Major components of successful seagrass resilience are reproduction and recruitment, which increase genetic diversity and therefore resilience capacity. Although originally thought to be driven by clonal expansion, there is increasing evidence for some species, such as Thalassia testudinum, that dispersal and expansion are largely driven by sexual reproduction. Through analysis of T. testudinum short shoot leaf and flower scars, we are able to reconstruct individual plant reproductive history through time. For certain seed-bearing species, such as Halodule wrightii, we are able to estimate reproductive output by quantifying seed banks in sediment cores. Here we will discuss the benefits and uses of these methods, and present results of seagrasses that persist at the highly dynamic Chandeleur Islands, LA, highlighting species-specific spatial patterns. Quantifying the reproductive effort of these local populations will enhance our understanding of reproductive ecology and resilience of seagrasses and seagrass communities, and further inform larger management efforts including long-term monitoring programs and potential restoration projects.	203A	11:15 AM	11:30 AM

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Title	Speaker	Description	Location	Starts	Ends
Listening First, Mapping Second: Co-Creating Flood Visualization Tools	Christine Buckel	To make research truly useful to decision making, science users need more than findings in peer reviewed journals—they need products that deliver the information in formats and contexts that integrate into their decision-making streams and processes. This means research projects should inherently be interdisciplinary, including physical scientists, social scientists, extension specialists, and intended users throughout the project. For our compound flood mapping project in Mobile Bay, Alabama, we are developing map products that not only show flood extent and depth, but also the influence of nature-based solutions (NBS) on compound flooding. We worked collaboratively with individuals who could ultimately use these data such as natural resource managers, planners, engineers, and community decision-makers. Through workshops, virtual meetings, and one-on-one conversations, we identified the NBS projects to include in the modeling and we learned what is needed to increase the usability and usefulness of the information—what types of maps would be helpful, how they could use the data in real situations, and how they preferred to access information. We also studied visualization best practices to understand common pitfalls: where people get confused, what they might misinterpret, and how to design around those issues. By combining direct feedback from users with proven design principles, we developed an online tool that, we believe, is both scientifically sound and practically useful. In this talk, we'll walk through our co-development process and share lessons learned about communicating flood risk effectively. We'll offer practical recommendations for anyone looking to bridge the gap between research and real-world application. This presentation is part of the Cooperative Institute for Research on Hydrology (CIROH) project titled “Assessing Nature-Based Solutions to Mitigate Flood Impacts and Enhance Resilience.”	204B	11:15 AM	11:30 AM
Apalachicola Watershed Coordination Blueprint: Advancing Ecological Restoration Through Improved Collaboration	Laila Racevskis	To assist with improving collaboration and coordination among the many entities working to manage the natural systems within the Apalachicola River and Bay System, the Apalachicola Watershed Coordination Blueprint Project (AWCB) was initiated to create a trusted source of information in the watershed and to change how interested parties work together within the watershed. The project is in its third year and has utilized a combination of methods to achieve these goals, including an inventory of interested parties; management and restoration plan review; multiple workshops and individual expert interviews; data compilation and analysis; literature review; and funding opportunities review. Results of the work to date include identification of restoration priorities, gaps, needs, resources, and team-building approaches for specific projects, such as long-term living shoreline monitoring, slough restoration, fire management, and others. The AWCB project has established a steering committee to facilitate collaboration and project development for Coastal Habitat, Hydrologic, and Upland Habitat Restoration focus areas. To further facilitate partnership-building and ensure gaps and needs are addressed, an online AWCB Information Hub has been created that provides maps, data, and other resources related to restoration projects, interested parties, literature, agency reports, funding opportunities, and other information relevant to ecological restoration activities and needs in the watershed. Results of this work help provide insights into collaborative ecological restoration approaches by showcasing innovative ecological restoration and conservation partnerships, projects, and resources in the watershed. The presentation will highlight collaboration success stories, provide attendees with opportunities to engage with the AWCB network, and illuminate opportunities for additional collaboration and partnership-building.	202B	11:15 AM	11:30 AM

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Title	Speaker	Description	Location	Starts	Ends
CANCELED TALK Exploratory Scenario Planning for Climate Mobility: Early Insights from Three Community Projects	Daniela Faria	Climate mobility, the movement of people in response to climate-related risks, presents urgent and complex challenges for communities across the world and across the United States. By 2100, millions may be displaced by sea-level rise, stronger storms, wildfires, drought, and other climate-driven hazards, while other areas may experience rapid population influxes. The Gulf Coast exemplifies this dual reality: it is both a sending and receiving region, as seen after Hurricane Katrina, when more than 200,000 displaced New Orleans residents evacuated to Houston and tens of thousands ultimately made the city their permanent home. These interconnected dynamics create significant planning pressures related to housing, infrastructure, ecosystem health, social services, land markets, and fiscal resilience. In response to these evolving challenges, the Lincoln Institute of Land Policy's Consortium for Scenario Planning launched a 2025 Request for Proposals to support three community-based exploratory scenario planning (XSP) projects focused specifically on climate mobility. These projects are currently designing and delivering participatory workshops that use climate projections to explore multiple plausible futures, identify strategies that perform well across scenarios, and strengthen collective decision-making capacity. This presentation will share early observations and anticipated areas of insight from the ongoing work, including methods for translating climate data into relatable narratives, approaches for engaging diverse and historically underrepresented stakeholders, and emerging considerations related to equity, governance, housing, and institutional readiness. While results are still in development, the session will outline initial themes and research questions surfacing across the three project sites. These insights aim to support planners, researchers, and practitioners seeking to integrate climate mobility into resilience planning while navigating deep uncertainty.	201C	11:15 AM	11:30 AM
Revisiting Decades of Fish Spawning Aggregation Research in the Florida Keys: Integrating Technology, Partnerships, and Management Applications	Danielle Morley	Research on reef fish spawning aggregations in the Florida Keys spans several decades and illustrates the parallel evolution of technology and collaboration among research partners. Over time, advances such as hydroacoustic surveys, remote video monitoring, telemetry arrays, and autonomous underwater vehicles have greatly enhanced the spatial and temporal resolution of aggregation studies. Despite these innovations, maintaining long-term, standardized datasets across the region remains a persistent challenge. Shifting management priorities and inconsistent funding have led to uneven sampling intensity among aggregation sites, resulting in data gaps—particularly in long-term biomass and behavioral trends. Here, we synthesize the historical and ongoing research on fish spawning aggregations throughout the Florida Keys, detailing focal species, geographic coverage, participating partners, and the suite of technologies employed through time. We also describe how select datasets, such as those from Riley's Hump and Western Dry Rocks, have directly informed fisheries management actions. Finally, we identify opportunities to strengthen data continuity, standardization, and integration of emerging technologies to advance adaptive management of these critical reproductive habitats.	201B	11:15 AM	11:30 AM

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Title	Speaker	Description	Location	Starts	Ends
Cycles of extreme discharge and drought drive the early recruitment of Eastern Oyster in Mississippi.	Chet Rakocinski	Historically, fluctuations in oyster stocks track cycles of extreme discharge and drought in Mississippi. A recent cycle occurred between 2019 and 2023. During the dramatic discharge event of 2019, unprecedented freshwater discharge from the Bonnet Carré spillway completely decimated adult oysters, effectively eliminating early oyster recruitment. Extreme regional rainfall depressed salinities throughout the oyster recruitment period of 2021. Recruitment limitation of oysters continued for several years. The cycle culminated with a historic drought in 2023, in conjunction with high spat settlement. Interannual and spatial variation in spat settlement corresponded with salinity throughout the five-year study period. Relative abundances of spat at inshore and offshore sites varied inversely between 2021 and 2023, indicating distinct hydrological regimes. Growth rates of transplanted juvenile oysters varied interannually and spatially with respect to salinity. Salinity likely serves as a proxy for a host of other concurrent ecological factors affecting early oyster recruitment in Mississippi, potentially including currents, temperature, DO, predation, and food quality. Extreme discharge-drought cycles thereby mediate early oyster recruitment in the Mississippi Sound estuary. Current environmental challenges demand an adaptive oyster management strategy in Mississippi.	201D	11:15 AM	11:30 AM
Evacuation planning for communities threatened by Climate Change.	Hernan Ulloa	Background/Objectives: Climate change induced disasters such as the Syrian, Australian Maui and California wildfires are displacing people within their own countries. The tools and procedures used to deal with this increasingly common situation are reactive, post-event. This leads to responses which can be inefficient and affect both migrating and receiving communities unfairly. The bulk of climate change impacts that lead to evacuations are borne by communities that are the least able to adapt. Planning for evacuation before the need is critical in preparing communities and in lowering the cost of and increasing the probability of an adequate response. A robust simulation tool assists in planning for evacuations. This can aid the planner in modeling the flow of community members, supporting the routes, selection of receiving communities and pre stocking of resources. Policy variations can be applied to the model for evaluation. Approach/Activities: This is a laboratory project using existing geographic mapping, traffic and routing technology. The scale of the simulation is determined by emergency services. Geographic and infrastructure data is integrated as needed for the selected area of interest. Emergency services denote the starting point of the evacuation and its possible destinations. The model integrates the area information and plans the evacuation and its possible destinations. The model integrates the area information and plans routes and identifies possible negative impacts. To test other scenarios, Emergency services create a policy to define the created scenario. The base technologies investigated for the model implementation are GIS and other routing / geographic technologies. Custom routing algorithms use the base utilities but enhance them as needed to represent detrimental conditions in an evacuation such as traffic blockages, flooded routes. AI techniques and parallel processing tools are used to minimize the time to reach a solution by the model and to suggest policy approaches. Results/Lessons Learned: Emergency services implement simulation designs to test and author evacuation response plans. Execution of the model is done using custom algorithms and base technology which is used by the custom algorithms. The custom algorithms describe transportation impacts based on access (flooding, traffic blockages) policy (evacuation routing to areas that have more gas stations, highways with traffic lanes running in one direction) and services (hospitals, food access). The base technology supports generic access to geographic information and routing information for a geographic area.	202A	11:15 AM	11:30 AM

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Title	Speaker	Description	Location	Starts	Ends
Bringing Baffin Back: Cultivating Stewardship Through Place-Based Education	Athena Frasca	The Bringing Baffin Back initiative, led by the Harte Research Institute (HRI) and the Coastal Bend Bays & Estuaries Program (CBBEP), is a collaborative, science-based effort to restore the health and resilience of Baffin Bay, an iconic South Texas estuary experiencing long-term water quality decline and habitat loss due to nutrient pollution. A central component of this effort is the initiative's education and outreach arm, which applies principles of place-based learning to connect youth, landowners, and community members living in a >1.5-million-acre rural watershed to Baffin Bay through hands-on education and outreach that fosters stewardship, ecological literacy, and community engagement. A cornerstone of this education effort is the Exploring Baffin Bay Experience, a youth program offered annually in partnership with Texas Brigades, a non-profit youth education organization. This immersive, field-based event introduces participants ages 9–17 to watershed science, water quality monitoring, fisheries ecology, and birding through the lens of conservation and outdoor recreation. Delivered at no cost to participants and supported by volunteers, the program builds conservation knowledge about Baffin Bay and leadership skills in local youth, many of whom are experiencing the Bay for the first time. Complementary efforts extend place-based education across the watershed through public workshops and outreach about riparian and stream health, septic system maintenance, soil health, grazing management, and sustainable lawn care. Direct mailers, community tabling events, and a growing social media presence help maintain stakeholder engagement and inform residents about ongoing restoration activities. Together, these efforts advance long-term watershed resilience by equipping residents with the tools and knowledge to make informed land and water management decisions. This presentation will share lessons learned from integrating place-based education into a watershed restoration framework, including approaches to partnership-building, program evaluation, and adaptive outreach. The Bringing Baffin Back initiative's education program demonstrates how connecting science and community through experiential learning can cultivate stewardship, strengthen ecosystem literacy, and build local capacity for sustaining Gulf ecosystems for future generations.	203B	11:15 AM	11:30 AM
Long-term management and monitoring of Chester Island for the recovery and stability of colonial waterbird populations	Alexis Baldera	Audubon Texas leases and manages Chester Island (70–80 acres) as a bird sanctuary in Matagorda Bay, Texas. Chester Island has the greatest species richness and diversity of local rookeries and provides nesting habitat for over 20,000 pairs of waterbirds each year. Twenty-four coastal bird species, including 10 Species of Greatest Conservation Need in Texas (Black Skimmer, Gull-billed Tern, Forster's Tern, American Oystercatcher, Reddish Egret, Snowy Egret, Brown Pelican, American White Pelican, Little Blue Heron, and Tricolored Heron) use the island. Audubon has invested in decades of management to enhance the island and protect this important bird rookery. The island recently received sediment from nearbya dredging operation to add new sandy unvegetated habitat for ground-nesters like Black Skimmers and terns. The site will receive erosion control structures in the next five years to protect the shoreline and long-term success of the nesting birds. This talk will summarize bird trends on the island, management needs and recent restoration efforts.	204A	11:15 AM	11:30 AM
Panel Discussion: Cooperative Research and Management of Fish Spawning Aggregations in the Gulf	Michelle van Deventer	Panel Discussion for Cooperative Research and Management of Fish Spawning Aggregations in the Gulf. Panelist include: William Heyman, Sustainable Marine SolutionsBrian Bartlett, Eckard CollegeMary Conley, The Nature ConservancyDanielle Morley, Florida Fish and Wildlife Conservation Commission Panelists will describe their experiences and lessons learned related to cooperative monitoring and assessment of Fish Spawning Aggregations (FSAs). Attendees will have the opportunity to ask questions and share their own perspectives.	201B	11:30 AM	12:00 PM
Panel Discussion 1: Nature Based Solutions for Compound Flooding in Gulf Coast Estuaries	Julia Cherry	Panel discussion 1 for the Nature-Based Solutions for Compound Flooding in Gulf Coast Estuaries: Advancing Modeling and Decision-Making Evaluation Plan session. Panel will include a discussion on preparing flood model inputs from multiple types of data sources: biological, ecological, socio-economic, etc.	204B	11:30 AM	12:00 PM

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Title	Speaker	Description	Location	Starts	Ends
Fostering Collaboration for Effective Gulf Restoration and Resilience: MBRACE, MDEQ, and MDMR	Helen Olmi-Graham	This year marks sixteen years of collaboration within the Gulf of Mexico to address the aftermath of the Deepwater Horizon oil spill. As part of this collective effort, the Mississippi Based RESTORE Act Center of Excellence (MBRACE), Mississippi Department of Environmental Quality, and Mississippi Department of Marine Resources work together to enhance coordination and collaboration among researchers funded by Deepwater Horizon penalty funds and state agencies. We aim to support research that contributes to effective management and long-term resilience of the Gulf ecosystem and coastal communities. The collaborative process begins with identification of research topics through a joint effort in formulating Requests for Proposals. This ensures that research initiatives align with the pressing needs of restoration practitioners and resource managers, fostering research that is not only scientifically rigorous but also directly applicable to management decisions. Building on this framework, we will provide an overview of MBRACE's current funded projects that focus on water quality, bacterial dynamics, satellite-based monitoring, and oyster reef sustainability across the Mississippi Sound. These projects exemplify how collaborative, applied science supports restoration outcomes and strengthens the connection between research and resource management. As the Gulf's data landscape evolves, there is a growing realization of the need for dedicated synthesis initiatives. Our presentation will discuss the value of investing in such initiatives, emphasizing how a structured approach can meet the evolving goals of the Gulf community. We aim to illustrate the importance of fostering ongoing dialogue and collaboration between organizations like MBRACE and state agencies for the successful application of research that is scientifically robust and directly informs management decisions.	202B	11:30 AM	11:45 AM
Seagrass status and trends at the Chandeleur Islands, LA	Kelly Darnell	The Chandeleur Islands are a chain of barrier islands in the northern Gulf located approximately 80 km offshore that support the only marine seagrass beds in Louisiana. These seagrass meadows rely on the protection provided by the islands to survive. Here we share the results from a long-term seagrass monitoring program and a study to inform restoration of the Chandeleur Islands to benefit seagrass (Chandeleur Islands Restoration Project for Seagrass, ChIRPS) and describe trends in seagrass species distribution and condition over time, including the current status of seagrass at the Chandeleur Islands. Monitoring has identified a decline in seagrass cover and shifts in species distribution and dominance over time, both of which are likely driven by a loss of land area of the Chandeleur Islands and changing environmental conditions. Despite these losses in seagrass cover, the Chandeleur Islands remain a hotspot for seagrass diversity, as all five seagrass species that grow in the northern Gulf are still present at the Islands where they provide a range of ecosystem functions such as critical habitat for a variety of vertebrate and invertebrate species.	203A	11:30 AM	11:45 AM
Scenario Planning for Resilience in the Coastal Georgia Sentinel Landscape	Michelle Covi	University of Georgia Marine Extension and Georgia Sea Grant is partnering with GLISA, the NOAA Climate Adaptation Partnerships/Regional Integrated Sciences and Assessments (CAP/RISA) team for the Greaat Lakes Region to advance resilience planning in the coastal region of Georgia. The team partnered with representatives of the military and the Georgia Sentinel Landscape Coordinator to plan and conduct a scenario planning workshop to assess environmental challenges assocated with changes occurring in the area due to changing weather and climate trends and explore actions that can address impacts to military operations and the local community. The Georgia Sentinel Landscape is an area where conservation, working lands and national defense interest converge and was designated by leaders of USDA, DOD, and DOI in 2017. GLISA developed their scenario planning framework for practitioners to plan for a range of future weather and climate conditions and disruptions, and have applied it in many different communities and facilities throughout the Midwest. The application of the process to the Georgia Sentinel Landscape is a unique opportunity to bring together military, federal and state agency, and community partners to discuss climate resilience through actions and collaboration opportunities.	201C	11:30 AM	11:45 AM

Title	Speaker	Description	Location	Starts	Ends
Extreme Weather Alters Fishing Effort and Recovery Dynamics in the Gulf of America	Juan Carlos Villaseñor-Derbez	The Gulf supports a wide range of industrial, artisanal, and recreational fisheries operating in both U.S. and Mexican waters. Each year, these fishers are exposed to tropical storms and hurricanes that generate substantial economic losses. Yet, the pathways through which these events affect fishing activity remain poorly understood. Fishers may be disrupted if (i) hazardous conditions limit access to fishing grounds, (ii) storms damage private vessels and public infrastructure, or (iii) extreme winds and waves affect habitats and redistribute target species. Here, we combine millions of vessel-tracking observations from U.S.- and Mexican-flagged vessels with wind fields for 62 named storms that traversed the Gulf between 2012 and 2022 to estimate changes in fishing effort before, during, and after hurricane exposure. Using this unique daily gridded dataset of fishing effort and storm-force wind exposure (>33 m/s), we uncover three patterns. First, fishing effort in exposed grid cells significantly declines three days before exposure to storm-force winds, peaks at -50% on the day of landfall (relative to effort a week before; $p < 0.01$), and returns to baseline 10-12 days after winds subside. Second, a 10% increase in wind speed reduces fishing hours by about 10.1% and the number of fishing vessels by about 18.5% ($p < 0.01$). Third, effort overshoots the historical baseline 12–15 days after exposure, suggesting compensatory behavior. In tandem, these results reveal short-lived but economically meaningful disruptions to fishing activity, highlighting how extreme weather perturbs human use of ocean space and may interact with ecological recovery dynamics. Our results may inform work seeking to understand how fishers adapt to hurricanes and highlight the need for measures that enhance safety and accelerate post-storm recovery in coastal fisheries.	202A	11:30 AM	11:45 AM
Linking Wildlife and Community Resilience: The Oceans & Wildlife Institute Training Model	Miriam Belblidia	The Oceans & Wildlife Institute (OWI), based at the Texas State Aquarium, is pioneering a place-based education model that integrates wildlife conservation, emergency response, and community resilience for the Gulf Coast. Designed as an applied training and workforce development initiative, OWI is piloting training and undergraduate courses that tie together wildlife and community resilience. OWI's flagship course, Foundations of the Wildlife Branch Operations, immerses participants in the operational realities of disaster response and wildlife care. Through interactive learning and real-world simulation exercises, trainees gain competencies in the National Incident Management System (NIMS) and the Incident Command System (ICS), learning to coordinate wildlife reconnaissance, rehabilitation, and release operations during hurricanes, oil spills, and cold-stun events. The program extends beyond technical response skills, piloting undergraduate course curriculum on Wildlife & Community Resiliency with undergraduate Texas A&M students. In order to foster the links between ecological understanding, stewardship, and decision-making, this curriculum grounds students in the principles of social-ecological resilience drawing from leading research on wildlife and community systems. By linking ecological theory with applied field practice, OWI promotes a new generation of conservationists equipped to work across emergency management, environmental education, and coastal restoration. This presentation highlights the collaborative design process behind OWI's training program, and the lessons learned from its pilot implementation. It will share evaluation findings on participant engagement, cross-sector collaboration, and the value of experiential, place-based education in strengthening Gulf communities' ability to protect both wildlife and people in the face of increasing environmental hazards.	203B	11:30 AM	11:45 AM

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Title	Speaker	Description	Location	Starts	Ends
Freshwater inflow effects on natural oyster mortality in the Mississippi Sound	Aaron Ridall	The eastern oyster (Crassostrea virginica) is a robust fishery and aquaculture interest in the United States, especially along the gulf coast. Disease, habitat loss, overharvesting, and climate change have decimated oyster reefs across the U.S., with major losses in the southeast. Recent increases in freshwater inflow to the Mississippi Sound and Bight from frequent Bonnet Carré Spillway (BCS) – a flood control structure that diverts excess Mississippi River water away from New Orleans and into the western Mississippi Sound – openings have created even more vulnerable oyster populations. Therefore, we sought to understand how freshwater inflow from BCS operations has affected natural oyster mortality within the western Mississippi across time, and how these mortality trends compare to those across the coasts of North America. We used survey data to track changes in oyster mortality from 2011 – 2022 along with data on BCS operations to evaluate its contribution to the mortality trends. We additionally sourced field oyster mortality data from research across the eastern U.S. and the Gulf of Mexico for geographic comparison. Oyster mortalities were affected by interactions between freshwater discharge volume and distance to the BCS, maximum weekly temperatures and dissolved oxygen levels, and monthly rainfall and days of suboptimal salinity in the month leading up to sampling. The oyster mortalities during BCS operations were also higher than nearly all natural mortality rates reported in the literature. This study serves as the first effort to evaluate how freshwater inflow affects oyster survivorship in the Mississippi Sound and how BCS operations contribute to these natural mortality trends. Understanding the complex interactions between anthropogenic and environmental drivers of oyster mortality can support long term monitoring efforts and management decisions for these especially important organisms and their reefs.	201D	11:30 AM	11:37 AM
CANCELED TALK The importance of the Monito Island rat eradication initiative for the restoration of other islands in the Puerto Rican Archipelago	Miguel Garcia-Bermudez	The eradication of Black Rats from Monito Island was the first rat removal action implemented by the Puerto Rico Department of Natural and Environmental Resources (PRDNER) starting in 1992 and received great resistance internally and externally. The main conservation targets were the recovery of the Monito Island gecko and important seabird's colonies. This action was completed in 1999, and Monito gecko population assessments (2016 and after) showed dramatic increases in numbers with population estimate of 7661 geckos and occupancy of 27.8%. Thus, the Monito Island gecko was removed from the U.S. Endangered Species list in 2019. Post delisting monitoring for the gecko and assessments of the seabird's population have continued and the success of this project has supported the implementation of more ambitious eradication programs in lands under the jurisdiction of PRDNER. In addition, the relatively reduced amount of resources invested in this successful initiative should encourage conservation organizations to identify and prioritize restoring similar species with short time and manageable efforts to recover.	204A	11:30 AM	11:45 AM

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Title	Speaker	Description	Location	Starts	Ends
Investigating alternative Bonnet Carré Spillway operation effects on Mississippi Sound and Bight fish and shellfish	Kim de Mutsert	The Bonnet Carré Spillway (BCS) is a flood control structure on the Mississippi River (MR) that has recently been operated for 3 years in a row in 2018, 2019, and 2020; and for twice in a calendar year (2019) for the first time. The amount of MR water diverted into Lake Pontchartrain during BCS openings varies depending on the duration of the openings, and the number of gates opened. BCS openings impact the salinity, temperature and water quality of the Mississippi Sound and Bight (MSB). In this study, we investigate the impact of recent BCS openings on fish and shellfish species in the MSB by using a coupled modeling approach. We hypothesized that modifying the BCS openings by reducing the number of gates opened per day and the maximum number of gates opened during an opening may reduce the impacts of BCS openings on coastal and estuarine fish and shellfish species. To test this hypothesis, the Coupled Ocean Atmosphere Wave Sediment Transport modeling system for MSB (msbCOAWST) is used to hindcast past BCS openings (2018, 2019 and 2020), and to simulate varying opening scenarios such as: 2019 without the second opening; 2019 with shorter second opening; openings reducing the MSR discharge to 1.2 million cfs and 1.25 million cfs; and slower-paced openings with 10 bays opened per day. A new Ecospace model was developed using Ecopath with Ecosim (msbEcospace) and loosely coupled to msbCOAWST to evaluate effects on fish and shellfish in the same region. The msbCOAWST salinity and temperature output is used to simulate the effect of the above-mentioned scenarios on 35 fish and shellfish species at different life stages. Preliminary results show that impacts and reduction of impacts by reducing the pace and amount by which salinity is reduced varies by species, and is more pronounced in sessile species such as eastern oyster, and less pronounced in nektonic species such as white and brown shrimp.	201D	11:37 AM	11:45 AM
Facilitated Discussion: Activating Collaborative Science for a Sustainable Gulf	Kristin Ransom	Join session conveners: Kristin Ransom, NOAA Office for Coastal Management; Caitlin Young, NOAA RESTORE Science Program; Douglas George, NOAA National Estuarine Research Reserve (NERR) Science Collaborative; Helen Olmi-Graham, Mississippi Based Restore Act Center of Excellence (MBRACE), Angela Underwood, Weeks Bay NERR for a facilitated discussion based on talks from the following presentations. The Gulf eDNA Network: Unifying Environmental DNA Research and Collaboration Across the Gulf - Yasmina ShahBuilding and sustaining a distributed nutrient sensing network on the U.S. Gulf Coast - Beth StaufferFrom Discovery to Stewardship" FLRACEP RFP V Research in the De Soto Canyon and Northeastern West Florida Shell - Kristin EricsonApalachicola Watershed Coordination Blueprint: Advancing Ecological Restoration Through Improved Collaboration - Laila RacevskisFostering Collaboration for Effective Gulf Restoration and Resilience: MBRACE, MDEQ, and MDMR - Helen Olmi-Graham	202B	11:45 AM	12:00 PM

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Title	Speaker	Description	Location	Starts	Ends
Gulf Youth Ambassador Program: Our Gulf Hope in Action	Coral Castillo	The Gulf Youth Ambassador Program is a place-based education initiative that engages young leaders ages 14–19 in cultivating stewardship, environmental literacy, and community action across the Gulf of Mexico. Grounded in experiential learning and culture and environment connections, the program helps youth build meaningful relationships with their local watersheds through hands-on community projects, mentorship, and learning in natural spaces. Ambassadors participate in monthly virtual sessions led by environmental professionals and youth leaders that deepen ecological understanding, strengthen communication skills, and support youth-driven project design rooted in local environmental needs. During the program, each Ambassador develops and implements a place-based community project, such as watershed education campaigns, coastal cleanups, or pollution research, that addresses real issues while engaging their community where they are with messages tailored to local concerns. To date, 13 Ambassadors from Texas, Louisiana, Alabama, and Mexico have completed 13 projects reaching more than 1,444 community members. These projects highlight effective strategies for sparking curiosity, encouraging behavior change, and fostering decision-making grounded in ecological awareness and advocacy. Evaluation plays a central role in demonstrating the program's impact. Project documentation, outreach metrics, and reflective assessments help measure gains in environmental literacy, communication effectiveness, and youth confidence in scientific understanding. The program culminates in a youth summit where Ambassadors present their work and share lessons learned, contributing to a growing regional network of young stewards. By connecting youth to culture, place, and community, the Gulf Youth Ambassador Program demonstrates the value of learning in and from nature while strengthening the collective capacity for Gulf stewardship.	203B	11:45 AM	12:00 PM
Examining the effect of salinity on dolphin mortality using Lagrangian particle tracking in a hydrodynamic model	Anna Linhoss	Numerous dolphins are found dead on beaches and waterways of the Gulf of Mexico and Mississippi Sound every year. In 2019 an unusual mortality event (UME) occurred when 337 deceased bottlenose dolphins were stranded between Louisiana, Mississippi, Alabama, and Florida. According to NOAA, based on observations of skin lesions or distinct ulcerative dermatitis and other internal pathologic findings and the environmental conditions during that period, the identified cause of this UME was determined to be protracted exposure to low salinity waters. Dolphin carcasses are often found stranded on beaches days after they die. Consequently, their initial place of death is unknown. In this study, an existing 2D hydrodynamic model (EFDC+ 11.2) of the Mississippi Sound simulated by Armandei et al. (2021) was used to track dolphin carcass movement and to simulate salinity at the time and location of each predicted dolphin's death. Particles within the Lagrangian particle tracking module were used to represent the movement of 19 dolphin carcasses. Numerous particles (virtual dolphin carcasses) were seeded throughout the model domain and tracked for five days. These results were used to hindcast each dolphin's original location of death. The results indicate that the most likely place of death for 12 dolphins stranded on the beaches of Mississippi, along with the two found on Ship and Horn Islands, was west of their stranding location., For both of the dolphins stranded on Dauphin Island, the most likely place of death was in the Mobile Bay area north of where they were found. The remaining three dolphins found dead on barrier islands, most likely originally died near their stranding locations. The average simulated salinity of all the dolphins' most probable original place of death was below five except for two cases. These results are compared to the salinity of the Mississippi Sound during Bonnet Carre spillway opening and non-opening dates. The results highlight the significant impact of the spillway's opening on the reduction of salinity and its association with dolphin mortality.	201D	11:45 AM	12:00 PM

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Title	Speaker	Description	Location	Starts	Ends
Drivers of Seagrass Decline at the Chandeleur Islands: Insights from Field Data, Remote Sensing, and Numerical Modeling	Martijn Bregman	The Chandeleur Islands, a barrier-island chain off the coast of southeastern Louisiana, have undergone extensive erosion and land loss driven by insufficient sand supply, sea-level rise, and tropical cyclones. The shallow back-barrier area of the Islands supports seagrass meadows, which have also declined over time. The central hypothesis for this study is that seagrass decline is primarily driven by loss of island protection, which alters local hydrodynamic conditions and sediment transport patterns, creating a more energetic back-barrier environment that is less conducive to the survival or establishment of seagrass meadows. To test this hypothesis and better understand the drivers of seagrass decline, an integrated framework was developed that combines field observations, remote sensing, and numerical modeling. Field data provides insight into recent seagrass coverage and hydrodynamic conditions within and outside seagrass beds, while remote sensing offers a long-term record of changes in seagrass extent. Numerical modeling, representing several recent historical island configurations, was used to evaluate how evolving topography, bathymetry and seagrass coverage influence waves, currents, and sediment transport. The results provide insight into the loss of seagrass meadows in recent history, and whether this was primarily due to direct hurricane impacts (i.e., uprooting or burial of seagrass) or indirect effects (i.e., increased wave exposure due to loss of island protection). The model experiments improve understanding of the hydrodynamic and sediment transport conditions within the meadows and help identify the conditions associated with seagrass decline, particularly for areas that have become increasingly exposed to wave energy.	203A	11:45 AM	12:00 PM
Resources for Community Preparedness and Coastal Resilience from NOAA's National Ocean Service	Elizabeth Hieb	The National Ocean Service (NOS) is NOAA's lead for positioning the nation's coasts, communities, and ecosystems for resilience in the face of change. NOS delivers a wide range of operational services, data products, and decision-support tools and works collaboratively across NOAA and with other partners to best apply these resources to community needs. Here, we will share an overview of the eight program offices within NOS, including the Center for Operational Oceanographic Products and Services (CO-OPS), Office for Coastal Management (OCM), Office of National Marine Sanctuaries (ONMS), National Geodetic Survey (NGS), Integrated Ocean Observing System (IOOS), National Centers for Coastal Ocean Science (NCCOS), Office of Coast Survey (OCS) and the Office of Response and Restoration (OR&R). We will highlight science, data, and services from NOS offices that support preparedness, response, and recovery in the face of extreme events and long-term coastal change. We will also share specific examples of NOS resources and their applications in the Gulf of America. By integrating NOS capabilities into local and regional efforts and strengthening relationships among NOS and its partners, we can ultimately work together toward more prepared and resilient communities across the Gulf region.	202A	11:45 AM	12:00 PM

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Title	Speaker	Description	Location	Starts	Ends
Assessing bird population, displacement, and collision vulnerability from offshore energy development in the Gulf of Mexico	Greg Forcey	Energy development in the Gulf of Mexico (Gulf) and the potential for future development have raised concerns that bird populations could be affected, particularly during the spring migration. Understanding bird vulnerability is useful not only for understanding potential impacts to birds but also for planning ways to minimize those impacts. We conducted a novel review of 318 bird species known to occur in the Gulf and assessed population, displacement, and collision vulnerability for each species. We determined vulnerability based on a review of demographics, behavioral traits, life history, morphometrics, habitat use, and conservation trends. Based on these metrics, we calculated vulnerability values for each species. Population vulnerability was highest for northern storm-petrels, shearwaters and petrels, frigatebirds, and gannets, primarily driven by low clutch size, long life span, high age at first breeding, and low global population size. Displacement vulnerability includes species circumventing their preferred habitat, such as anhinga, storm-petrels, and loons, as well as species attracted to structures, which are therefore deflected from migratory pathways during migration, such as swifts, swallows, kinglets, and gnatcatchers. Collision vulnerability was highest for species that don't rest on the water and fly constantly during the day and night, such as osprey, swifts, nightjars, and falcons. Application of vulnerability assessments in the Gulf can identify bird species groups that are most affected by energy development. These species groups can be prioritized for future research efforts to better understand how adverse impacts can be minimized or mitigated.	204A	11:45 AM	12:00 PM
Louisiana Wetland Days: Standard Aligned Learning in A Place-Based Context	Dani Dilullo	Recognizing the need for high quality place-based learning, Louisiana Sea Grant has been cultivating partnerships with school districts, universities, state agencies, and many others to co-create outdoor learning opportunities. Funded through the National Academies of Science Gulf Research Program, Wetland Days are customized explorations of the habitats near participating schools. Over the past 3 years, Louisiana Sea Grant has engaged with over 1,500 students across coastal Louisiana. Hear some of the successes and challenges Sea Grant has encountered as they have taken their educational programming on the road.	203B	1:30 PM	1:45 PM
Synthesis for marine mammal restoration and beyond	Elizabeth Fetherston	In many ways, the marine mammal resource type exemplifies the challenge of effectively collecting, combining, and evaluating essential information for decision-making. Cetaceans (whales and dolphins) of the Gulf – particularly those offshore – are complex, long-lived, difficult to study, and ecologically specialized animals. Understanding status, trends, habitat use, life history, and response to stressors are all critical to planning, implementing, and evaluating restoration efforts. In order to operationalize what we know and fill in what we do not, the Deepwater Horizon marine mammal restoration effort has funded a portfolio of projects to understand injured cetaceans, aggregate data, model the cumulative impact of stressors, reduce threats, and evaluate the impact of these investments. What we are finding is that combining biological, ecological, stressor, health, and threat information is difficult to do across the different spatial and temporal scales of measurement with the purely quantitative frameworks that are the norm in marine mammal science. We are also finding that there are opportunities for new synthesis frameworks that support restoration, and the insights from CETACEAN data aggregation, LISTEN GoMex PAM data analysis, PCoMS statistical modeling, large vessel surveys and assessment modeling, SDM restoration evaluation, and other sources can and do come together to paint an incredibly insightful picture of the status, trajectory, and opportunities to restore Gulf cetaceans. This talk will briefly unpack the different aspects of data collection, aggregation, and analysis from the marine mammal resource type in order to set the stage for a discussion of how the hybrid qualitative/quantitative structured decision making model successfully brought all of the restoration information together into a common, exportable framework, and provides an opportunity to widen our regional definition of synthesis in the science-for-management enterprise.	201D	1:30 PM	2:00 PM

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Title	Speaker	Description	Location	Starts	Ends
Developing a Community of Practice in Oyster Shell Recycling and Reef Restoration	Karen Estella Smith	Oysters are a vital component of a healthy estuary, an important subsistence protein source, and a large contribution to the seafood industry in the Gulf Coast, but are in severe decline throughout the region. Oysters also improve water quality and can stabilize shorelines against erosion. Collecting discarded shells from restaurants to return to coastal habitats for substrate is a critical effort towards a more sustainable future. Oyster shell recycling is gaining recognition around the country and has been employed in the northeast region for over two decadesbut, is still new along the Gulf Coast. With support from NOAA, Restore America's Estuaries is working with five regional organizations to develop and expand their oyster shell recycling and reef restoration programs. A major component of this program is building a community of practice among the five organizations so they can provide mutual support and learn from each other's experiences. Through regular group calls and annual learning exchanges, the staff of these organizations are building connections and gaining expertise from each other, andexpanding more rapidly as a result. The program also includes support for monitoring and evaluation, not only to ensure that the reefs meet NOAA's standards, but also to provide a basis for future reef design. Community engagement is another core component of the program. RAE is providing support to each organization for their outreach and education activities, to help them build on a commitment to equity and inclusion. RAE hopes to expand this program in the future to include new organizations focusing on under-served communities.	201C	1:30 PM	1:45 PM
A Systematic Community Engagement Strategy to Enhance Climate Resilience: the Community COFFER Program	Margaret Reams	Researchers point to key community "capacities" as building blocks of resilience, including trusted sources of information, understanding of changing hazards, and an ability to derive lessons from prior disturbances and the financial resources to implement adaptive actions. We apply this resilience framework to our community engagement in Lake Charles, Louisiana as part of a five-year innovative program to create and fund natural infrastructure for flood protection and to provide expanded access to solar power during emergencies. A central challenge is to convince stakeholders that the proposed collective actions will be effective and worth the investments. We tackle these challenges through three community engagement components: Building Trust: The Community Co-Financed Flood and Energy Resilience Initiative (CCOFFER) project team will partner with a trusted local institution, the Community Foundation Southwest Louisiana, to gather data and insights concerning community priorities for climate resilience. Supporting Understanding of Risks: We will collect and provide responses to technical questions from the community concerning the CCOFFER program elements, such as land-value enhancement, natural infrastructure for flood protection, and solar-based strategies to increase power grid resilience. We will gamify a model that our team will develop to demonstrate expected reductions in flood risks associated with new natural infrastructure, such as sponge parks. Enhancing Adaptive Capacity: We will establish several avenues of the "co-production" of specific adaptations – including the placement of sponge parks to absorb flood water. We will identify and examine "lessons learned" over the five years to replicate CCOFFER in other Gulf Coast communities. Ultimately, we seek to build trust, raise scientific understanding about natural infrastructure for flood control, and to support community members' ability to evaluate the tradeoffs and to take action to enhance the overall resilience of their community. We will gather input from the community stakeholders through the process described above to gain new insight into community priorities for resilience-building investments, more effective research translation methods, and to identify key influences on stakeholders' attitudes and willingness to support the type of collective adaptive actions our models suggest. This window into public acceptance in Lake Charles will be invaluable, and the insights that we can gather should be generalizable to other Gulf Coast communities.	202A	1:30 PM	1:45 PM

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Title	Speaker	Description	Location	Starts	Ends
Ducks Unlimited largescale floodplain restoration in the Apalachicola River System, Florida: from project construction to monitoring and assessment	Jeff Beal	Ducks Unlimited (DU) recently restored wetlands on state-owned land (MK Ranch) along the Apalachicola River in Florida's Panhandle, funded by the National Fish and Wildlife Foundation. The project involves a partnership of state, federal, and non-profit entities for the benefit of fish and wildlife in the region. The 5800-acre site contained 55 miles of ditching installed to create a rice farm. Based upon hydrologic modeling, the process involved the strategic restoration of certain manmade features by land smoothing and ditch plugging and installation of low water crossings to re-establish sheetflow across the landscape within the historic floodplain of river. The largescale, multi-year earth-moving project presented numerous logistical challenges. Monitoring for the project includes in situ water quality and elevation gauges plus drone imagery collected within 20-acre belt transects. The drone-derived aerial images were used to develop georeferenced orthophotographs, 5-band data, digital terrain models, and canopy height models. DU and its contractor collaborated to develop a drone and field ground-truthing data sampling plan based on current vegetative community distribution, post-restoration goals, site access, and FAA regulations. We collected high-resolution multispectral (red, blue, green, infrared, and near infrared) and digital drone imagery to document pre- and post-restoration conditions of the forested and herbaceous wetlands. Performance measures for the project were developed in conjunction with the monitoring components. A strong relationship between water level at the river and at the project site informs restoration performance. Following roughly 50 years of isolation, the floodplain habitats are reconnected to the Apalachicola River, providing water storage and quality improvements as well as benefits to fish, wildlife, and the public who enjoy these natural resources along this important Florida river system.	201A	1:30 PM	1:45 PM
Thermal Radiometry and Resilience: Landsat Surface Temperature and Ground Station Insights along the Northern Gulf Coast	Greg Carter	Gulf coastal communities face increasing exposure to compound hazards, including heat stress. To provide regional context for understanding coastal thermal environments, Landsat 8 and 9 surface temperature (ST) observations (2013–2024) and ground station air and water temperature records were analyzed for a region spanning from the western extent of Lake Pontchartrain to the Florida Panhandle, extending inland and offshore from the immediate coastline. All Landsat scenes were filtered for zero cloud cover prior to download from USGS Earth Explorer, ensuring consistent thermal sampling over the study period. Landsat ST provides 100 m spatial resolution observations at ~10:30 a.m. local solar time every 8 days, offering a reproducible baseline for detecting regional hot spots. While this sampling frequency and spatial resolution do not resolve heat signatures of smaller objects, they highlight zones of elevated thermal stress that may signal ecosystem and infrastructure vulnerabilities. Regression analysis linking station observations with Landsat ST reveals consistently precise relationships that could be extended with appropriate validation toward estimating afternoon conditions, when peak heat stress occurs. Results demonstrate how Landsat thermal radiometry reveals spatial thermal patterns that contribute to ecological and human vulnerabilities and provides a framework to guide resilience planning across the Gulf Coast.	201B	1:30 PM	1:45 PM
A New Coastal Data Ecosystem: How Florida's Seafloor Mapping Initiative is Meeting Diverse User Needs	Kimberly Jackson	This statewide project integrates data collection via topo-bathymetric LiDAR to a depth of 20+ meters along with multibeam sonar in shallow water to fill LiDAR data gaps and deeper bathymetry from 20+ - 200 meters. Data collection areas were based on prioritization efforts until funds were expended. Florida's Department of Environmental Protection's Office of Resilience and Coastal Protection and the Florida Geographic Information Office coordinated with federal partners to guide data acquisition and maximize funds. In coordination with our vendors, the project moved forward after overcoming sargassum seaweed mats, hurricanes, and snowstorms (yes, Florida had snow). The final deliverable will include a seamless, high quality, Statewide elevation model with rich meta data, from inland to nearshore to offshore; the first of its kind for Florida's user community. Join us to learn how these data will be hosted, shared, and leveraged in diverse ways to improve modelling and resource management across the Gulf.	202B	1:30 PM	1:45 PM

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Title	Speaker	Description	Location	Starts	Ends
CANCELED TALK Mapping Justice: Youth Led GIS Solutions for Environmental Advocacy	Tyquan Morton	What happens when youth are given the power to tackle environmental challenges in their own communities? This session highlights trubel&co's leadership in youth-centered data civics through our Mapping Justice initiative, our flagship data civics program that equips underserved high school students with geospatial and data storytelling skills to advance environmental and climate justice. Building from our work in Hawai'i and adapting its model for the Gulf Coast, this session highlights how community-based mapping can bridge divides between science, data, and civic life. In the Gulf region, rising seas, land loss, and inequitable exposure to heat and flooding threaten both ecosystems and livelihoods. Through Mapping Justice, students use GIS to investigate climate vulnerability, access to green space, and the distribution of environmental burdens. Through hands-on data collection, visualization, and storytelling, participants connect local knowledge to public datasets, generating place-based insights that inform both community advocacy and regional climate resilience planning. The session will center student stories, highlighting how youth-led spatial analysis deepens understanding of coastal change and resilience science. Participants will engage with case examples of student-generated maps and dashboards that reveal environmental risk patterns, highlight socio-environmental inequities, and propose data-driven interventions. Session objectives include: Demonstrate how participatory mapping and youth engagement can strengthen ecosystem and human community resilience across the Gulf. Share strategies for integrating community-grounded data into regional climate adaptation and science education initiatives. Attendees will leave with practical tools and frameworks for connecting technical data to community-based stories and decision-making.	203B	1:30 PM	1:45 PM
A Framework for Knowledge Discovery in Complex Systems: Integrating Covariation Mining and Dynamic Simulation	Danlin Yu	Modeling complex urban systems for effective policy analysis remains a significant challenge, often caught between the subjective structures of traditional simulation models and the predictive yet opaque nature of modern machine learning. Our team at the Community Co-Financed Flood and Energy Resilience (CCOFFER) initiative introduces the Covariation Mining-Supported System Dynamics (CM-SSD) framework, a novel methodological synthesis designed to bridge this gap. CM-SSD leverages data-driven covariation mining from multivariate time-series data to empirically derive the dependency structure of a system, which then informs and parameterizes a formal System Dynamics model. This integration provides an objective, evidence-based foundation for simulating the nonlinear feedback and time-delayed effects inherent in urban dynamics. The framework's utility is demonstrated through an application to the urban-economic system of Lake Charles, Louisiana, using annual data from 2007 to 2024. The analysis focuses on uncovering the pathways of influence through which Green Stormwater Infrastructure (GSI) and Federal Spending affect city-level house prices. The discovered network of influence reveals a critical, policy-relevant reinforcing feedback loop: GSI investments not only directly support property values but also catalyze increased federal per capita spending, which in turn provides a secondary stimulus to the housing market. By moving from observational data to a validated simulation model, the CM-SSD framework offers a robust, transparent, and powerful tool for ex ante policy evaluation in complex systems, representing a significant contribution to the fields of data mining, knowledge discovery, and computational social science.	204B	1:30 PM	1:45 PM

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Title	Speaker	Description	Location	Starts	Ends
Integrating Seagrass Genetic Diversity and Connectivity into Management across the Gulf	Laura Reynolds	Genotypic and genetic diversity provide the resources for populations to evolve to changing conditions over both the long and short term. Individuals vary in traits (e.g. growth rates, nutritional quality, and response to stressors) resulting in variable survival as environmental condition changes. Disturbances likely reduce overall diversity but may allow individuals that are better adapted to survive. Importantly, connectivity with nearby populations provides an influx of new genes to support that evolution as well as provide a propagule source when populations die back. Understanding landscape genetic diversity and connectivity patterns are essential for effective restoration and management plans. Here we present two case studies integrating seagrass genetic diversity into management. The Chandeleur Islands in Louisiana support the only marine seagrasses in Louisiana (i.e. potential isolation and little connectivity) and are an example of a rapidly changing environment (i.e. high disturbance regime). An upcoming large scale island renourishment project will further alter the region making resilience and thus genotypic and genetic diversity of these seagrasses a management concern. The state of Florida has invested in a Seagrass Restoration Technology Initiative with the aim of creating a 10 year seagrass restoration plan that in part increases restoration success by incorporating resilient seagrasses into plantings. In each of these cases we have genotyped regional seagrasses, estimated connectivity, and created digestible products aimed at practitioners.	203A	1:30 PM	1:45 PM
Overlap analysis of species and threats: approaches for identifying areas of co-occurrence for targeted restoration activities	Eric Weissberger	Many of the Natural Resources Damage Assessment approaches to restoring open ocean resources injured by the Deepwater Horizon oil spill focus on the reduction of threats and/or harmful interactions with species. In order to maximize the impact of restoration actions, it is helpful to locate threat and interaction reduction projects in areas where they have the greatest effect and/or affect multiple resources. The first step in identifying potential project locations is to conduct a geospatial analysis of focal species, including their migration corridors and important habitats, and the threats they face in high-use areas. Here we present an approach for conducting such an analysis, including data set selection, scales of spatial and temporal aggregation, the combination of different sources of data, and methods of overlap of multiple resources and threats. We will share sample results as well as data gaps identified for both focal species and threats. The results of this analysis may be used to guide selection of locations for threat reduction projects and serve as a baseline for evaluating the outcome of these efforts.	204A	1:30 PM	1:45 PM

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Title	Speaker	Description	Location	Starts	Ends
Cultivating Coastal Resilience Leaders on the Northern Gulf Coast	Larisa Lee	Providing coastal climate resilience internships, fellowships, and early career opportunities has been a key programmatic feature of both the Program for Local Adaptation to Changing Environments (PLACE) and the Community Resilience Center and has led many to further careers in resilience related jobs. As the climate resilience field continues to expand, it is necessary to develop a workforce that is knowledgeable, robust, and reflective of the affected communities. Project PIs reimagined the standard pipeline to the coastal climate resilience workforce and developed a fellowship program to increase inclusion of underrepresented groups in resilience fields. Six young adults, from groups traditionally underrepresented in coastal resilience efforts, participated in a year-long fellowship where they were placed with a host organization in coastal Mississippi. Host sites work in a broad range of topical areas from traditional environmental resilience to resilience work from a socioeconomic standpoint. Fellows participated in a series of lunch-n-learns to gain a deeper understanding of threats the Northern Gulf Coast environments are facing. Through this learning series, they were introduced to a variety of resilience topics and how to effectively use climate data and tools in their work. Taking the knowledge gained through working with their host organization and the content from lunch-n-learns, the fellows collaborated to develop a communication campaign. We'll share some of the evaluation data and discuss project outcomes, successes, and lessons learned, which could be applicable to a variety of education or fellowship programs.	202A	1:45 PM	2:00 PM
Understanding drivers of change in seagrass ecosystems to inform management of critical habitats in the Gulf Islands National Seashore	M. Zachary Darnell	The goal of this project is to identify and monitor long-term trends and variability in seagrass-dominated ecosystems in and around the Gulf Islands National Seashore (GUIS) and identify drivers of change in biodiversity and productivity of these systems. GUIS is comprised of discontinuous areas in Mississippi and Florida that span ~250 km from its western end at Cat Island, MS to its eastern end at Okaloosa Island, FL. Across this distance are distinct gradients in salinity, water clarity, and seagrass species composition. This project takes an integrated and sustainable approach to characterize and identify shifts in ecological baselines and integrate data to support management needs in GUIS. Research questions are as follows: (1) How do the seagrass-dominated ecosystems of GUIS (including both the seagrasses and the associated nekton community) respond to environmental/weather variability and extreme events? (2) How are these ecosystems changing over time? (3) What are the primary drivers of change in biodiversity and productivity of these systems?	203A	1:45 PM	2:00 PM

Title	Speaker	Description	Location	Starts	Ends
Project design considerations in the decadal-scale development of ecosystem services in restored salt marshes in Galveston Bay, TX	Anna Armitage	Wetland restoration is a critical component of a multi-faceted coastal management strategy to compensate for impacts from disturbance and development. An important restoration goal is to support local economies by reestablishing essential ecosystem services such as erosion protection, fishery support, and carbon sequestration. However, older restoration sites are seldom evaluated to assess their longer-term capacity to provide ecosystem services. We compared metrics linked to key ecosystem services across a series of restored marsh islands (established between 2004 and 2012) and reference salt marsh sites in Galveston Bay on the Upper Texas Coast (USA). We estimated carbon sequestration potential from high resolution elevation surveys, soil carbon content, and plant cover and biomass. We evaluated food web support by assessing the relative abundance of basal trophic sources, particularly benthic microalgae and infauna. In older restored sites, plant cover and biomass were variable among islands, and substantial portions of the area had subsided to low tidal or subtidal elevations. Despite differences in the plant community, soil organic content concentrations in the older restored sites approached reference site conditions. However, trophic support for coastal food webs differed among sites; restored sites had more diverse plant communities and up to 4x more infauna, but half as much benthic microalgae. Overall, when considering metrics of ecosystem function, the restored sites provided a unique set of values to the Galveston Bay ecosystem, but these functions did not necessarily approach reference conditions. Restored sites, unlike reference areas, did not have a high elevation refuge for retreat in response to sea level rise, and may have limited capacity to respond to sea level rise. These results highlight the long-term benefits of including topographic heterogeneity, including high elevation refuges, in restoration site design, thus increasing the capacity of restored areas to persist and provide ecosystem services over decadal time scales.	201A	1:45 PM	2:00 PM
GRIIDC: How an Established Repository Evolves with Changing Technology and Standards	Rosalie Rossi	GRIIDC, a multidisciplinary data repository, has been providing data management and archiving services since 2011. GRIIDC partners with national and regional funding agencies that value quality data management and long-term preservation of scientific data to assist funded researchers with data sharing goals. Since GRIIDC's inception, data management standards, technology, data sharing requirements, and researchers' attitudes towards sharing data have changed. As the climate of open data has evolved, collaborations between funding agencies, researchers, and data repositories have become more important. Funding agencies and journals that require open data rely on repositories to support these goals and adapt to new standards. A major shift has been the adoption of FAIR principles, ensuring data are Findable, Accessible, Interoperable, and Reusable; another is the adoption of TRUST principles for data repositories, focusing on Transparency, Responsibility, User focus, Sustainability, and Technology. These principles direct GRIIDC data curation procedures, software development, and researcher training. Curation involves verifying that data are organized, well-documented, and in non-proprietary formats. GRIIDC training materials, such as guidance documents and webinar presentations, are regularly adapted to adhere to these guidelines, streamline the submission and curation process, and ensure researchers are prepared for data sharing. In adapting to an ever-changing open data climate, challenges arise such as recursively improving metadata attributes, longer curation time for datasets, additional exchange with researchers to manage data, and growing storage needs for larger and more complex datasets. Collaboration and support from funding agencies is vital to strong data sharing policies and proper data management techniques. Data repositories, working in tandem with funding agencies, researchers, and journals, have a significant role as data stewards in the changing landscape of open science.	202B	1:45 PM	2:00 PM

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Title	Speaker	Description	Location	Starts	Ends
An improved approach to detection and removal of subsurface derelict crab traps by the Mississippi Department of Marine Resources	Nickolas Moreno	Derelict fishing gear negatively impacts marine ecosystems and navigation safety. To combat these problems, the Mississippi Department of Marine Resources (MDMR) implemented a cleanup program to remove derelict crab traps and return functional traps to the fishermen when applicable. Since its inception in 1999, the MDMR Derelict Crab Trap Removal Program has removed more than 23,000 derelict crab traps from Mississippi coastal waters. However, the majority of these removals were from the marsh or intertidal areas, as earlier methods and technologies did not allow for effective targeting and removal of subsurface traps. As technology advanced, subsurface removal efforts were expanded to include traditional side-scan sonar and single grappling hooks; however, these methods have limitations and often lack operational efficiency. The incorporation of real-time, forward-facing sonar technology (e.g., Garmin Panoptix LiveScope) has greatly improved efficiency at locating and removing derelict crab traps in subsurface environments. In addition, MDMR staff constructed a custom beam trawl equipped with a series of grappling hooks, increasing retrieval precision compared to previous grappling approaches. Collectively, the integration of updated sonar technology and custom retrieval gear has improved the effectiveness of derelict trap removal efforts, with staff consistently identifying and removing higher numbers of traps. The use of drone surveys to identify derelict gear was also explored; however, this method proved to be cost- and labor-intensive. In addition, traps were detected at lower densities than anticipated and were predominantly located along the marsh edge, where visual boat-based survey techniques are already employed. Future drone surveys may be more effectively utilized during post-hurricane marine debris removal efforts.	204A	1:45 PM	2:00 PM
Integrated Restoration of Oyster Reef and Bird Nesting Habitat in Jones Bay, Texas	Sally Clark	In September 2025, the Galveston Bay Foundation (GBF) completed the restoration of four sites in Jones Bay. Where there was once unusable and degraded habitat, there are now 1.4 acres of oyster reef and 1.0 acre of bird nesting islands in Jones Bay. Each site involved the enhancement of a remnant nesting island to provide areas of higher elevations to allow for successful nesting of American oystercatcher pairs. In addition, the enhancement and/or creation of intertidal oyster reef was completed adjacent to each island to provide foraging habitat for nesting oystercatchers and their young. The reef was completed using limestone rock which is common practice in Texas, but seen as a alternative substrate in some eastern states where only shell is allowed. All necessary permits and leases via the USACE, GLO, and TPWD were secured. Given the ongoing relationship with the residents of nearby Tiki Island via GBF's Oyster Gardening Program, the Jones Bay project has been supported by the local community and did not encounter any significant obstacles in regard to community feedback. To help increase oyster recrutiment to the reef, all spat collected from the oyster gardening program in Tiki Island will be placed on the restored reef. Not only are oysters a critical component of a healthy estuarine ecosystem, but they also provide food and shelter for over 300 different species. GBF plans to monitor the islands for the next five years. The proposed monitoring will examine the utilization of the enhanced nesting islands and adjacent reefs by oystercatchers as well as the influences of the restored oyster reef on species interactions and the local food web. We cannot thank all our partners enough for their continued support and efforts on this project. GBF worked closely with partners from Gulf Coast Bird Observatory, US Fish and Wildlife Service, Texas General Land Office, Texas Parks and Wildlife Department, Galveston Bay Estuary Program, and Ducks Unlimited to ensure the proposed restoration efforts were effective and sustainable.	201C	1:45 PM	2:00 PM

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Title	Speaker	Description	Location	Starts	Ends
Life of Litter: Using GIS to Foster Environmental Stewards through Place-Based Science.	Fran Harvey	The Gulf South region faces a critical environmental challenge due to plastic pollution and localized litter accumulation, which contributes directly to the formation of the manmade Gulf Garbage Patch. To address this crisis, the two-year "Life of Litter" program, supported by a Gulf Research Program Place Based Learning grant, is building environmental stewardship capacity among teachers and students in the East Baton Rouge Parish (EBRP) school system. The initiative centers on using science and Geographic Information Systems (GIS) to solve their local campus litter problems. Students use Esri ArcGIS applications, working in the ArcGIS Online platform, primarily Survey123 for data collection and StoryMaps for visualization, to conduct scientific investigations of litter on their own school grounds. These local studies are framed within the larger context of the Baton Rouge area and the Mississippi River watershed. By leveraging GIS to analyze, interpret and explain their data-driven findings to school campuses and district leaders, students are empowered to propose and implement evidence-based solutions, transitioning them from observers to active environmental problem-solvers and citizen scientists.	203B	1:45 PM	2:00 PM
Integrating a Nutrient Sensor into a Coastal Observing Network: Evaluation of Performance and Long-Term Feasibility	A.J. Martignette	Continuous nutrient monitoring in coastal waters is essential for understanding ecosystem dynamics and managing water quality. Recent advances in sensor technology and decreasing costs have facilitated the expansion of real-time in situ water quality networks. Traditionally, these networks rely on multi-parameter sensors that measure core parameters such as temperature, salinity, pressure, and dissolved oxygen, and often include fluorometers for various optical measurements. While these sensors are reliable, affordable, and relatively low-maintenance, they generally lack direct nutrient detection capabilities. Only a limited number of in situ nutrient sensors are available that are specifically designed for high-biofouling marine environments. To address this limitation, in 2020, as part of a regional initiative, we tested a commercially available nutrient sensor and integrated it into the River Estuary Coastal Observing Network (RECON). Established in 2007, RECON consists of nine monitoring stations throughout the Caloosahatchee River and Estuary in southwest Florida. The Shell Point site, located at the mouth of the river, was selected for this test because it experiences the greatest tidal variability and salinity fluctuations, up to 25 PSU. Initial testing produced promising results, although several operational challenges were identified. A longer deployment period was needed to evaluate the sensor's long-term feasibility and stability. Building upon the initial deployment, this study further assesses the sensor's performance, compatibility, and potential to enhance continuous nutrient data collection in dynamic coastal environments.	201B	1:45 PM	2:00 PM

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Title	Speaker	Description	Location	Starts	Ends
Advancing Flood Modeling to Evaluate Stakeholder-Selected Nature-based Solutions in the Gulf Coast	Md Shahinur Rahman	Flooding is a widespread natural hazard that can cause severe loss and damage to individuals and the natural environment. Compound flooding, which results from the interaction of riverine discharge, storm surge, and extreme rainfall, presents an increasing threat to the Gulf Coast. Moss Point, Mississippi, situated at the confluence of the Pascagoula and Escatawpa Rivers, faces a significant risk of flooding due to its low elevation and proximity to both river systems, as well as the Mississippi Sound. This study investigates how Nature-based Solutions (NbS), hydrologic-hydraulic modeling, and stakeholder knowledge and input can contribute to enhancing flood risk management in the city of Moss Point. Nature-based solutions can complement stormwater management to help reduce urban flooding while improving environmental sustainability. Stakeholders, including city officials, community members, and stormwater experts, identified areas susceptible to recurrent floods and feasible NbS options that might help mitigate the risk. Rain gardens, bioswales, permeable pavements, and detention ponds are some of the NbS options that stakeholders have already selected. The Personal Computer Stormwater Management Model, PC-SWMM, was chosen out of six hydrologic, hydraulic and hydrodynamic modeling suites to help simulate the performance of the different NbS options and determine the optimal scale for implementation. A newly constructed NbS project at the Kreole Elementary School includes a rain garden and bioswale and performance data is being collected from these installations. Onset pressure loggers were deployed from June to August and October 2025 in the two different NbS areas, with the collected data used for model calibration and validation. This study will provide valuable insights on how NbS can reduce flood risk, how data-driven modeling can simulate potential reductions in urban flooding scenarios, and how stakeholder engagement can strengthen flood resilience planning.	204B	1:45 PM	2:00 PM
Immersive Resilience: Fostering Sense of Place in the Gulf through AI and Virtual Reality	Yusuf Sermet	The Gulf Coast faces existential environmental challenges—from rising sea levels to intensifying hurricanes—that require a citizenry equipped not just with scientific knowledge, but with a deep, personal connection to their local environment. Traditional STEM curricula often struggle to translate complex, abstract hydro-climate data into the lived reality of students. This presentation outlines a transformative initiative focused on bridging this gap through "Sense of Place" education, leveraging Artificial Intelligence (AI) and Immersive Technologies (VR/AR). We present the development and deployment of operational platforms, such as the AI-driven "BlueGAP" and "Flood Action VR," which allow learners in Louisiana, Texas, and Florida to visualize local environmental data and simulate disaster scenarios in their own neighborhoods. By transforming raw sensor data into interactive narratives, we empower students to step into the role of decision-makers, visualizing flood risks and mitigation strategies in real-time. From a technical perspective, this framework relies on advanced hydroinformatics cyberinfrastructure integrated with Large Language Models (LLMs). These LLMs power conversational AI agents that function as personalized "Data Experts," enabling users to query complex datasets using natural language without technical training. Furthermore, we leverage browser-based WebXR and holographic augmented reality to overlay simulated flood dynamics directly onto the user's physical surroundings. This in-situ visualization capability allows learners to witness potential future scenarios—such as storm surge impacts or infrastructure failures—superimposed on their actual environment, turning abstract risk models into tangible, localized experiences. Attendees will explore how hydroinformatics can be democratized to build a resilient STEM workforce, ensuring the next generation of Gulf leaders is prepared to navigate a changing climate.	203B	2:00 PM	2:15 PM

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Title	Speaker	Description	Location	Starts	Ends
Potential deepwater shrimp fishery resource in the Southern Gulf of Mexico	Adolfo Gracia	A systematic study along the Mexican continental slope (300-1200 m depth) of the Gulf of Mexico was conducted on board the R/V JUSTO SIERRA of the Universidad Nacional Autónoma de México, to study crustacean biodiversity and potential fishery resources. Sampling was carried with a shrimp trawling net (18 m mouth and 4.5 cm mesh). Most abundant large size deepwater shrimp species were Giant red shrimp Aristaemorpha foliacea, Scarlet shrimp Aristeopsis edwardsiana and Royal red shrimp Pleoticus robustus that together represented 90 % of the total catch. Other, like Aristeus antillensis, Penaeopsis serrata and Parapenaeus politus were less abundant and of minor size. High mean CPUE values (>1.0 kg/h) were registered at the 300-700 m depth range. Mean biomass and catch per unit effort registered values were 609 + 832 g/ha and 2.5 + 3.3 kg/h. High CPUE values (up to 18.62 kg/h) are in the range registered for several deepwater shrimp fisheries in the world. Four potential fishing grounds were identified in the upper slope. Shrimp abundance and value could be attractive enough for developing a deepwater shrimp fishery which can have an impact on the fragile deepwater benthic ecosystem. The eventual utilization of deepwater shrimp must consider a sound fishery plan to assure sustainable exploitation while minimizing impacts on the fragile deep-sea ecosystem.	204A	2:00 PM	2:15 PM
Acoustic Observing as a Foundation for Gulf-Wide Scientific Synthesis: Integrating Biological, Physical, and Anthropogenic Insights	Kaitlin Frasier	Abstract: Regional-scale synthesis depends on persistent, comparable, multi-modal environmental observations. Long-duration Gulf-wide acoustic datasets, initiated under NSF and GOMRI and expanded through the NRDA Restoration and NOAA RESTORE Science programs, are one of the only in situ data streams that scale across time, ecosystems, and national boundaries. The LISTEN program, the Deep-Sea Benefits Project, and related efforts now provide a synthesis-ready acoustic backbone that captures marine species occurrence, ecosystem variability, weather signatures, and anthropogenic noise across the basin. Acoustic observations are translated into standardized metrics that account for regional and sensor differences, ensuring comparability across platforms and years. These metrics are then integrated with complementary datasets including remotely sensed surface conditions, 4D ocean circulation models, AIS vessel traffic, historical seismic activity, and glider-based acoustic and imaging systems. Multi-sensor deployments link biological aggregations and net catches of potential prey fields, deep oceanographic features, and local acoustic events at high spatial and temporal resolutions. Binational collaborations with Mexican partners further contextualize seasonal patterns, industrial activity, and regional management priorities. Early synthesis outcomes are emerging from these integrations. Gulf-wide acoustic indicators now allow visualization of species distributions alongside offshore industrial activity and transportation patterns. Coupling full-depth ocean models with biodiversity metrics reveals how deep ocean dynamics shape biological presence. Vessel-associated noise patterns can be examined in relation to vessel efficiency and operational behaviors. Long-range propagation of airgun signals provides insight into the composition and structure of the deepest Gulf basins. These examples demonstrate how combining large-scale observing frameworks with collaboratively defined questions can produce decision-relevant, cross-disciplinary insights. By simultaneously capturing biological activity, physical processes, and human activities, including stressors and threats, acoustic observations offer an integrated lens for understanding Gulf ecosystem change and a practical foundation for working with industry and government entities toward common goals.	201D	2:00 PM	2:15 PM

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Title	Speaker	Description	Location	Starts	Ends
Identifying Knowledge Gaps in Wave-Seagrass Interactions: Understanding Hydrodynamic Thresholds.	Tabassum Islam	Seagrass meadows play a vital role in the marine ecosystem health by providing biodiversity support, sediment stabilization, nutrient cycling, and wave energy attenuation. Despite increasing interest in nature-based solutions for coastal resilience, many engineering projects lack scientific grounding when claiming structures will create conditions to aid seagrass establishment and/or recovery. Additionally, relatively few studies have evaluated the impact of hydrodynamic forces on seagrass distribution and recovery and quantified the hydrodynamic parameters threshold for the same. Specifically, for the Gulf Coast where the continental shelf is broad with shallow bathymetric features and microtidal conditions, these nearshore habitats are extremely susceptible to wind driven wave circulations, current induced sediment resuspension, water depth, orbital velocity, and other environmental factors. Therefore, it is critical to understand the impacts of these dynamic processes and delineate the thresholds of hydrodynamic and wave parameters on overall long-term seagrass resilience within the Gulf of America. We will present our study which synthesizes the existing limited body of literature that demonstrates critical knowledge and methodology in identifying the specific design parameters required to provide an engineered wave energy mitigation solution to promote seagrass restoration and highlights the required future research needs to support restoration and management strategies for the vulnerable Gulf coastal ecosystems.	203A	2:00 PM	2:15 PM
CHARM Support for Coastal Community Resilience Index	Kelsey Johnson	This project seeks to align the CHARM (Community, Hazards and Resource Management) Platform and mapping capabilities with the Coastal Community Resilience Index to provide an opportunity for a more robust process for communities to assess vulnerabilities and opportunities for improved resilience, and inform the build out of CHARM Online. The scope includes one workshop in each of the five gulf states to pilot the alignment. The process will also help CHARM Online UX Designers better understand how to include the CRI as a use case in the online platform.	202A	2:00 PM	2:15 PM
Using NDVI to assess post-restoration vegetation health and land cover	Mindy Joiner	Coastal restoration projects can provide invaluable resilience, biodiversity, and habitat benefits. Monitoring the performance of these projects provides an opportunity to assess the success of the project, implement adaptive management measures, and learn valuable lessons for planning future projects. However, traditional field monitoring activities can be time-intensive and may require multiple people to collect data. Normalized Difference Vegetation Index (NDVI), or greenness index, methodology has several applications, including agriculture, forestry, and other land-cover based uses. It can also be incorporated into post-construction monitoring plans as a measure of plant health. For a beach nourishment project in Alabama, this methodology was implemented to assess vegetation greenness, density, spatial coverage and plant health through aerial imagery. Drone imagery captured using a multispectral camera was processed and the amount of reflected chlorophyll pigment captured was converted to vegetation index values. These values are a measure of plant health and could be easily compared between restored sites and reference sites, different habitat types, across years to assess project performance, and post-construction to verify survivability of vegetation and increase in vegetative coverage. Results showed that the healthy vegetative cover in the newly constructed and planted beach nourishment area is increasing over time and approaching that of the reference sites. Results were ground-truthed and complementary field data was collected. Overall, field time was greatly reduced when compared to standard field data collection methods. NDVI provided an efficient monitoring methodology for plant health, which helped provide an overall assessment of restoration project success.	201A	2:00 PM	2:15 PM

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Title	Speaker	Description	Location	Starts	Ends
Modeling Gulf Property Dynamics via Causal Inference and Graph Neural Networks	Xinyue Ye	Flooding and energy instability erode household wealth and local tax bases across the Gulf Coast, disproportionately impacting LMI homeowners. Studies show flood exposure lowers property values by 2–10%, while green stormwater infrastructure can raise prices by up to 8.8%. Evidence on clean-energy and grid-modernization projects remains limited but suggests modest value gains when benefits are visible and equitable. Yet, capitalization effects depend on siting, quality, and neighborhood context—poorly maintained or sited projects may reduce value. Few studies address these interacting factors, limiting insights for equitable and sustainable adaptation planning. To address this gap, the Community Co-Financed Flood and Energy Resilience (CCOFFER) initiative proposes an integrated "what-if" modeling framework that fuses causal inference with graph neural networks (GNNs) to evaluate how local environmental, infrastructural, and socioeconomic conditions jointly influence property-value responses to resilience and energy-transition investments. The framework generates spatially explicit, context-aware evidence to inform sustainable decision-making across Gulf Coast communities. In Stage 1 (Causal Identification), modern difference-in-differences and event-study methods isolate localized, time-resolved impacts of flood or energy interventions on property markets, revealing how price responses differ across contexts such as baseline risk, LMI concentration, and infrastructure quality. In Stage 2 (Graph-Based Learning), these causal signals are embedded within a heterogeneous GNN linking parcels, facilities, and risk nodes through spatial, drainage, and energy networks. This design learns nonlinear, place-specific interactions—how flood connectivity, facility accessibility, and social vulnerability jointly shape property values—while retaining causal consistency. Once trained, the hybrid model functions as a "what-if" simulator, allowing users to test alternative investment or hazard scenarios and assess equity impacts. The initial testbed in Lake Charles, Louisiana will expand to New Orleans, Mobile, and Corpus Christi. Collaborative development with governments, utilities, and community partners ensures transparency and policy relevance. Integrated into the Gulf Coast Resilience Data Center (GCRDC), the system will deliver automated data pipelines and gamified visualization tools for participatory planning. By linking causal inference, graph learning, and scenario simulation, CCOFFER advances understanding of how infrastructure, risk, and social context interact across the Gulf Coast—supporting equitable, financially sustainable, and community-centered adaptation strategies.	202B	2:00 PM	2:15 PM

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Title	Speaker	Description	Location	Starts	Ends
Near real-time Monitoring and Assessment of Environmental and Aquatic conditions for Alabama Coastal Fisheries and Aquaculture by Integrating Multi-se	Yuehan Lu	The Alabama Gulf Coast is one of the most fertile aquatic environments for fisheries, providing critical breeding and nursery habitats for numerous fish species. The survival, growth, reproduction, and recruitment of fishery and aquaculture resources depend on favorable environmental and water quality conditions. We are working on a project to develop a remote sensing–driven, near real-time monitoring and mapping system for the Mobile Bay estuary. This system will enable continuous assessment of seasonal and interannual variability in environmental and aquatic conditions. Using multiple satellite observations, we will derive and map key parameters such as chlorophyll-a (Chl-a), total suspended sediments (TSS), and colored dissolved organic matter (CDOM). To achieve this, we will design and calibrate remote sensing algorithms and models capable of producing high-resolution daily maps of these variables. Targeted field surveys will collect water quality measurements alongside drone-based multispectral and thermal imagery to support calibration and validation efforts. The Google Earth Engine cloud computing platform will then be used to scale up these measurements, leveraging its extensive satellite data archives to automate computation, mapping, and visualization. This approach will generate dynamic products including environmental condition maps, habitat suitability indices, and oyster growth potential forecasts. This near real-time, autonomous monitoring system represents a significant advancement over current efforts, which rely primarily on periodic sampling and fixed monitoring stations. Designed for sustainability and ease of use, the system will provide fisheries managers, aquaculture operators, and other stakeholders across Alabama with timely, actionable insights to support resource management and industry development.	201B	2:00 PM	2:15 PM
Expansion, Branding, and Weather: Challenges of Starting and Expanding a Shell Recycling Program	Richard Radigan	With the limited availability of fresh cultch, oyster reef restoration faces a number of logistical challenges. Oyster shell recycling programs are one way to meet that challenge. Starting, expanding, and maintaining these types of programs is a monumental task and requires continuous innovation and internal evaluations. Responsible and sustainable expansion allows for the intake of shell at levels necessary to supplement if not entirely provide for shell needs while keeping staff, volunteer, partners, and project needs in consideration is paramount. Branding is vital for recognition and identity. It is important to consider all available options including trademarks. Changes in climate patterns faced by coastal communities present another potential challenge in obtaining fresh shell. From increased seasonal temperatures to multiple major hurricanes, navigating these uncontrollable factors requires continuous pivoting. The Tampa Bay Watch Shells for Shorelines program has faced and navigated, sometimes successfully, many of these challenges.	201C	2:00 PM	2:15 PM
Evaluating coastal risks and Nature-based Solutions for risk reduction along the Gulf Coast	Patrick Barnard	Advancing coastal resilience requires a clear understanding of community-level risks and a robust evaluation of the costs and benefits of adaptation strategies, including Nature-based Solutions (NbS). Gulf Coast states face growing threats from flooding, erosion, and groundwater hazards, yet lack a comprehensive framework to quantify these risks or assess how local solutions can mitigate them. In collaboration with institutions such as USGS, University of Arkansas, and Deltares over the past two decades, we present modeling approaches that have been deployed across the country to systematically evaluate coastal hazard risk and the effectiveness of NbS under current and future conditions. Our findings show that conserving and restoring tidal wetlands—such as mangroves and salt marshes—can be highly cost-effective; for example, existing mangroves across the Gulf Coast prevent an estimated $1 billion in annual storm damages. Expanding evaluations of NbS—including the restoration of salt marshes, beaches, and dunes—across the Gulf region will help guide cost-effective investments in coastal sustainability.	204B	2:00 PM	2:15 PM

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Title	Speaker	Description	Location	Starts	Ends
Advancing Science and Partnerships for Beneficial Use of Dredged Material Through NOAA's ESLR Program	Trevor Meckley	Advancements to science and improved partnerships are needed to align the complex, time-intensive requirements of beneficial use of dredged material (BU) projects, including sediment sourcing, site selection, site design, environmental analysis, and regulatory collaboration, with the goal of maximizing dredged material reuse. For the past nine years, NOAA's Effects of Sea Level Rise (ESLR) Program has fostered collaboration among interdisciplinary teams nationwide to advance the science and tools coastal managers need to mitigate hazard risks, integrating both built and natural infrastructure. ESLR projects have placed a strong emphasis on sediment management and modeling to evaluate the performance of various site designs for BU. Through discussing NOAA funded science projects in the Gulf and beyond, we will highlight the state of the science and future needs in the advancement of science and BU execution processes.	204B	2:15 PM	2:30 PM
Improving diet studies and fishery management: an online image analysis tool for identifying otoliths	Ellie Heflin	The effective management of fisheries species requires the conservation of the resources they need throughout their lives. Understanding the diet of predatory fish provides vaulable insight into their resource needs, yet diet studies face a significant challenge: the rapid rate of prey digestion. Within half to two hours, fish prey in the guts of warm-water predators are no longer identifiable from external morphology, and diet studies commonly report up to 80% of fish prey as 'unidentified fish'. However, many species can be identified from their otoliths which remain intact for many hours. We are developing a web-based tool using machine learning, to compare user-uploaded otolith images to a reference database, currently >2800 images from >60 spp from the northen Gulf of Mexico. Users are presented with the closest matches to their unknown otolith, summary statistics allowing evaluation of how reliable the match is at the species, Genus, Family, and Order levels, and can browse images from matching classes. Users have the option to input the weight of their otolith, and the tool will provide an estimate of the size of the fish it came from, based on otolith weight-fish size regressions we are developing for each species. The tool is performing successfully, with most errors due to limited sample sizes for species or size classes with similar shaped otoliths (e.g. Threadfin shad and Scaled herring). In addition to internal cross-validation of the tool, we will test it on otoliths found in the stomachs of spotted seatrout from Mobile Bay. The tool will greatly enhance the resolution and efficiency of diet studies, providing more information from every fish sampled. We are inviting potential users to test the tool and provide feedback, and to help expand our image library with contributions from other species and regions.	204A	2:15 PM	2:30 PM
Place-Based Whale and Dolphin Storytelling Along the Gulf Coast	Tommy Tucker	The Gulf is home to nearly a quarter of the world's whale and dolphin species, one of which (the Rice's whale) is endemic to our waters. This presentation provides listeners with stories that connect visitable sites along the Gulf coast with the life histories of individual cetaceans to share with their networks to support science communication efforts about marine mammals in the Gulf. The purpose of communicating stories that explicitly associate a visitable site with a personal history of a whale or dolphin is to bring the otherwise-cryptic species into the realm of the known and the familiar (e.g. the lactating female Rice's whale who buried in Fort De Soto Park, FL in 2009). These stories are concise, non-fiction pieces informed by marine mammal stranding records, whaling logbooks, local newspaper archives, first-hand accounts, and scientific publications woven together to foster local connections between humans and cetaceans. This talk highlights one or two stories per Gulf state and prioritizes stories according to the following: contemporary impact on the region, impact on the broader (including scientific) community, relative rarity of the species, and accounts from local sources. The stories shared in this presentation are designed to empower people to connect to the Gulf's cetaceans and to consider the Gulf a shared habitat, and success has been measured and evaluated informally by engagement from the learners and knowledge retained between visits. This talk and its associated materials have been used in story-telling with all ages from pre-K through gray and are designed to be accessible to anyone interested in the whales and dolphins in the Gulf.	106A	2:15 PM	2:30 PM

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Title	Speaker	Description	Location	Starts	Ends
Sea Turtle Atlas: An Interactive, Interoperable Platform for Data-Driven Restoration in the Gulf of America	Megan Howson	As the demand for accessible, high-quality data continues to grow, open access repositories play a critical role in supporting transparency, collaboration, and scientific discovery. Traditional repositories provide access to data but often lack the tools for visualization, integration, and applied analyses that are necessary for effective resource management and restoration planning. Addressing these gaps, Sea Turtle Atlas (STA) was developed as part of Deepwater Horizon restoration of injured sea turtle populations in the Gulf of America. STA is a curated interdisciplinary data system that integrates biological, environmental, and anthropogenic datasets. Built with input from subject matter experts and aligned with federal restoration priorities, this repository emphasizes geospatial visualization, interactive dashboards, and analytical tools that lower barriers to access and expand usability across research, management, and policy communities. STA incorporates interoperability, user-specific access controls, and embedded GIS-based analytical workflows, which allow stakeholders to perform customized analyses directly within the platforms without requiring raw data downloads. By leveraging FAIR (Findable, Accessible, Interoperable, Reusable) data principles within a cloud GIS ecosystem STA demonstrates how ocean observing data can be mined, integrated, and disseminated through interactive interfaces, bridging the gap between raw datasets and actionable insights. In doing so, this project advances restoration and conservation in the Gulf of America while offering transferable lessons for data-driven, user-centered platforms that support decision-making across domains.	201D	2:15 PM	2:30 PM
Alabama Oyster Shell Recycling Past, Present, and Future	Mark Berte	This is the Alabama Coastal Foundation's presentation as part of the Restore America's Estuaries session on the Gulf Community of Practice. We will provide information regarding the Alabama Oyster Shell Recycling program that was established in 2016.	201C	2:15 PM	2:30 PM
A Shore Thing: Planning a Resilient Future for Mobile County's Coastline	Christian Miller	Mobile County's extensive coastline, from the bustling Port of Mobile south to Alabama Port and Heron Bay, and west along Mississippi Sound through Coden, Bayou La Batre, and Grand Bay to the Mississippi state line, is a vital interface between land, water, and people. This region supports nationally significant estuarine habitats, critical infrastructure, working waterfronts, and vibrant coastal communities. However, it faces escalating threats from sea level rise, shoreline erosion, habitat loss, and intensified storms. Historic armoring, dredging, and land conversion have disrupted sediment dynamics and eliminated critical intertidal habitats. Today, more than 50% of the shoreline is armored, and recession rates in some areas exceed two feet per year. These impacts are intensified by tropical storms, wave energy, and salinity intrusion. To address these challenges, the Mobile Bay National Estuary Program (MBNEP) recently completed a countywide effort to develop a Comprehensive Shoreline Management Plan (SMP) to protect, stabilize, and restore this diverse and vulnerable coastal region. The plan addresses over 50 miles of shoreline, much of which has undergone significant degradation, and offers a roadmap to enhance resilience through science-based, site-specific nature-based solutions (e.g., living shorelines, marsh sills, breakwaters) that restore natural function while protecting infrastructure and property. The plan will serve as a replicable model for regional shoreline management, positioning Mobile County at the forefront of nature-based coastal resilience along the Gulf. A cornerstone of the initiative is the engagement of diverse stakeholders, including landowners, municipalities, agencies, and commercial operators, in co-creating and implementing solutions. MBNEP has allocated funding to help jumpstart implementation with multiple groups of property owners along Mobile Bay's western shoreline. This initiative recognizes that piecemeal, property-by-property fixes are inadequate to meet the scale of the challenge. Instead, it advances a unified, landscape-scale approach to coastal stewardship that reflects the interconnectedness of ecological processes, infrastructure protection, and community resilience.	202A	2:15 PM	2:30 PM

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Title	Speaker	Description	Location	Starts	Ends
Carbon dynamics of Subtropical Seagrass Meadows of the Mississippi Barrier Islands	Vivian Tidd	Seagrass meadows play a fundamental role in mitigating climate change by sequestering carbon within their sediments through photosynthetic processes, limiting carbon exchange with the atmosphere. Seagrasses are typically net sources of alkalinity and can therefore buffer ocean acidification, reducing detrimental effects on calcifying marine organisms. Despite this high capacity for carbon storage and alkalinity generation, there remains a research gap regarding how subtropical seagrass meadows perform these ecosystem functions in the Gulf of America. Incorporating different components of the carbon cycle including dissolved inorganic carbon (DIC), total alkalinity (TA), dissolved organic carbon (DOC), pCO2, and nutrients can provide a more comprehensive understanding of the total carbon budget for the Mississippi Sound. We hypothesized that seagrass beds in Mississippi would exhibit positive TA/DIC ratios, with values varying depending on the prevalent species and seagrass distribution at each site. To test this, we analyzed samples from over 80 locations across four barrier islands: Cat Island, Ship Island, Horn Island, and Petit Bois Island. Preliminary results from DIC and TA analyses suggest that the sampled seagrass meadows were net sources of TA, with TA/DIC ratios exceeding 1 across all four islands. Measurements of DOC, pCO2, CH4, and nutrients, are also analyzed and compared with environmental parameters such as salinity, temperature, dissolved oxygen, and pH, as well as physical seagrass meadow conditions, percent cover, species composition, and so on. This study contributes to the limited body of research on subtropical seagrass blue carbon dynamics and provides the first known dataset for this region. The findings highlight the importance of carbon sequestration, transport, and transformation as an ecosystem service of seagrass meadows, offering valuable insights to inform potential restoration and conservation efforts in the Mississippi Sound.	203A	2:15 PM	2:30 PM
Fine Tuned Large Language Models for Natech Analytics	Qingsheng Wang	Natural-hazard-triggered technological accidents (Natechs) pose compound risks to the process industries, yet large historical databases remain under-utilized due to unstructured narratives and keyword-based screening. In this work, we develop an automated, data-driven framework that fine-tunes generative large language models (LLMs) to jointly (i) classify Natech status and the primary hazard, (ii) extract affected unit–issue pairs, and (iii) generate brief, evidence-style justifications from incident text. Using the Texas Commission on Environmental Quality (TCEQ) air emission event database (2004–2024) as a region-specific testbed, we construct a supervised fine-tuning corpus via a schema-constrained template and evaluate the fine-tuned LLMs against LSTM and BERT baselines. The best fine-tuned model leads on every metrics, with an overall accuracy of 0.958 and macro-F1 of 0.930, while a compact 3B variant remains competitive, demonstrating the superior performance and data efficiency of pretrained transformers under constrained supervision. Applied at scale, the framework quantifies climate-related patterns in Texas. By frequency, Natech incidents form ∼6 % of statewide records, with counts surging during extreme years (hurricanes in 2005, 2008 and 2017; winter freeze in 2021). By excessive emissions, Natech contributions ∼10 % statewide and ∼14 % in coastal Texas; along the coast, hurricanes dominate and yield a disproportionately large share of Natech releases. The framework delivers single-pass, structured analytics that reduce manual effort and improve reproducibility, providing decision-ready evidence for emergency preparedness and mitigation. Looking ahead, coupling the model with retrieval-grounded weather data and human-in-the-loop audits could enable a production-grade Natech analytics agent for continuous monitoring and planning.	202B	2:15 PM	2:30 PM

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Title	Speaker	Description	Location	Starts	Ends
Development of an Autonomous Environmental DNA (eDNA) Sampling System for In Situ Filtration and Preservation	Kayla White	Environmental DNA (eDNA) has emerged as a non-invasive tool for monitoring aquatic ecosystems, allowing researchers to efficiently detect invasive species, assess biodiversity, track organismal activity, and identify rare species without disturbing the environment. Manual methods for collecting eDNA are time-consuming, labor-intensive, and limit spatial and temporal coverage. Autonomous systems have been developed to address the limitations of manual eDNA collection. However, many current platforms are costly, large, offer limited sample throughput, and face challenges with maintaining eDNA integrity during collection, storage, and transport. The goal of this study is to design a modular, scalable, and reliable eDNA sampling system that is capable of autonomously filtering and preserving discrete eDNA samples in situ. The main components of this system include a peristaltic pump, 2-way normally- closed solenoids, a custom manifold for fluid handling, an ESP32 microcontroller, and industry-standard 0.22 µm Sterivex filters. The prototype under development is designed for high-throughput with onboard capacity of 36 discrete filters and will maintain DNA integrity by automating post-filtration preservation. Following validation, the design will be scaled to maximize filter capacity and expand field operations. Remote configuration of sampling frequency is supported through the ESP32 microcontroller and will enhance the flexibility of the system. This proposed system offers a solution to challenges and limitations in manual and autonomous sampling by reducing labor intensity and time demands while maintaining sample integrity and offering a cost-effective alternative.	201B	2:15 PM	2:30 PM
High-resolution wetland vegetation mapping for living shoreline restorations	Alexandra Rodriguez	Living shoreline restoration uses natural and manmade materials to stabilize shorelines, offering a cost-effective and ecologically beneficial alternative to traditional hardened structures. Accurate and frequent monitoring is essential to track project success, a task increasingly facilitated by Unoccupied Aerial Vehicles (UAVs), which provide high-resolution imagery for precise vegetation mapping at a significantly lower cost than traditional surveys. This mapping is critical as marsh species community composition is a sensitive indicator of wetland health; shifts in dominant species signal changes in essential services like carbon sequestration and shoreline stabilization. To support monitoring at Living Shoreline sites in Alabama, this study used Random Forest (RF) classification on high-resolution UAV imagery, incorporating multispectral bands, a Digital Surface Model, and textural features to classify a marsh community comprised of several marsh taxa plus unvegetated terrain. The RF model achieved a high overall accuracy on test pixels, with the DSM and the Normalized Green Blue Difference Index identified as key predictive variables. To validate the RF classification, a ground-truthing strategy used stratified random sampling within "shrunken" polygons to ensure points were > 1 m from adjacent classes. Field data collection at each point includes: species composition, dominant cover type, canopy heights, elevation, and shoot density (collected at select points). The resulting ground-truth data will be directly compared to the RF classification to evaluate classification accuracy. The final output provides spatial coverage and total area estimates for key marsh vegetation classes, enabling the tracking of community compositional changes over time and an essential assessment of the restoration project's long-term efficacy.	201A	2:15 PM	2:30 PM
Session Q&A Data Management and Sharing Strategies	K Wallace		202B	2:30 PM	3:00 PM

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Title	Speaker	Description	Location	Starts	Ends
Gulf-wide Restoration Lessons Learned - Joint Round table discussion	Rebecca Prado	Join the Seagrass Community of Practice to advance monitoring, genetics, and Gulf restoration stategies in a round table discussion focusing on some recent highlights: Mobile Bay SAV: >50% loss since 1981 (storms, nutrients, dredging); recent AL gains. Use 1m/30cm aerial, 3m imagery + novel in-water sampling. Reproduction: Thalassia testudinum leaf/flower scars; Halodule wrightii seed banks. Chandeleur Islands show persistent diversity (all 5 Gulf species) despite erosion-driven declines. Chandeleur/ChIRPS: Long-term monitoring informs restoration amid land loss. Genetics: Chandeleur (isolated/high-disturbance) and Florida resilient planting via genotyping/connectivity. Hydrodynamics: Wave/current thresholds; engineered mitigation needed. Blue Carbon: MS Sound meadows net TA sources (TA/DIC >1), sequester C, buffer acidification—first regional data.	203A	2:30 PM	3:00 PM
How the first decade of FLRACEP-funded science is guiding a new 2024-2034 Strategic Plan focused on synthesis, connectivity, and collaboration	Mark Mueller	Effective Gulf restoration and management requires a collective shift from isolated research projects to a better coordinated, long-term regional synthesis enterprise. This presentation details the evolution of the Florida RESTORE Act Centers of Excellence Program (FLRACEP) and its 2024–2034 Strategic Plan that further prioritizes dynamic management and synthesis. Grounded in the findings of the FLRACEP Decadal Review, this presentation will review how over 20 multidisciplinary projects focused on science, technology, and monitoring within three RESTORE Act-eligible disciplines have addressed post-spill knowledge gaps and advanced ecosystem and habitat modeling, observing technologies, and long-term time series monitoring of fisheries and other wildlife. These results informed the Plan's objective of generating long-term understanding of the West Florida Shelf and connected systems to support improved management, with an emphasis on closer collaboration between Centers of Excellence, process-focused ecosystem-scale research, and co-production with managers and end-users to better translate science into management action. This Plan guided the design of the recently awarded RFP V, a targeted $4.2M investment in the De Soto Canyon and West Florida Shelf that directly promotes and operationalizes regional synthesis through research on topics such as physical–biological coupling, vertically migrating prey dynamics, and connectivity from the coast to the deep sea. New requirements for manager engagement and co-production of application-driven products aim to ensure scientific outputs that directly translate into restoration actions. Finally, we identify some remaining geographic and thematic gaps that could be addressed by Gulf restoration programs to help build a collective, synthesis-driven framework.	201D	2:30 PM	2:45 PM

Title	Speaker	Description	Location	Starts	Ends
Numerical modelling, risk analyses, and outreach to capture additional benefits to marsh restoration on Dauphin Island, Alabama	Peyton Caraway	Dauphin Island, Alabama, as a part of the northern Gulf of America's barrier island system, provides protection to a large portion of the state's coastal resources and approximately one-third of Mississippi Sound. The island has experienced historical beach and back-barrier marsh erosion driven by climatic and anthropogenic events which threaten the ecological services and protection provided by Dauphin Island. Graveline Bay, on the back-barrier side of Dauphin Island, has experienced approximately 75 acres of marsh erosion over the last 170 years. The National Fish and Wildlife Foundation Gulf Environmental Benefit Fund funded the construction of the Graveline Bay Marsh Restoration Project to remedy harm to injured natural resources from the Deepwater Horizon oil spill. Completed in the spring of 2023, the project restored approximately 60 acres of inter-tidal back-barrier marsh habitat through the design and construction of marsh mounds, maximizing the linear footage of highly productive marsh edge habitat. Additionally, nearby homeowners have experienced secondary benefits from the sheltered wave climate during high water level events. This reduction in flood risk is being studied by The Water Institute's Gulf Center for Equitable Climate Resilience to understand how the change in flood risk impacts actuarial risk rating with the goal to inform FEMA's Risk Rating 2.0 for the residents around this Bay. This pilot project scope included numerical modeling to inform potential wave height and total water level impacts to sheltered properties; engaging residents to assess type and frequency of flood insurance; education on FEMA's new Risk Rating 2.0 and the goals of the project; assessment of risk reduction; and generation of content for each homeowner with change in flood frequencies and corresponding reduction in actuarial risk; supporting residents to share results with insurance agencies; and tracking of road blocks to see if this project lowers premiums.	202A	2:30 PM	2:45 PM
Functional Assessment and Mapping of Headwater Slope Wetlands in Coastal Alabama	Christopher Anderson	Headwater slope wetlands are a ubiquitous forested wetland type located at the headwaters of coastal streams in Alabama and the southeastern U.S. Coastal Plain. There is concern that land use changes may alter hydrologic conditions and adjacent habitats that reduce the capacity for these wetlands to provide important services and functions (e.g., habitat, water quality improvement, and flood attenuation). We review past and recent work including an assessment of 74 headwater wetlands across coastal Alabama (i.e., Mobile and Baldwin County). These wetlands were assessed for important functional attributes (forest structure, soils, and hydrology) represented by various ecological measures. These data were compared to LULC data (i.e., % forest, urban and agriculture) from each wetland's catchment over a range of surrounding landscapes typical of the Alabama coast. Functional assessments were conducted based on methodologies detailed in a Hydrogeomorphic Approach (HGM) tool previously developed for headwater slope wetlands in Alabama and Mississippi. Roughly 25% of the wetlands examined had significant hydrologic alterations that precluded them from functioning as headwater slope wetlands. The wetlands that retained indicative hydrologic conditions generally supported moderate to good wetland function and, in some cases, were related to the level of land use change in the watershed. For instance, urban land use was shown to be positively related to non-hydric soil conditions based on measured surface soil color values. A significant relationship was also detected between wetland shrub cover and agricultural/urban land use suggesting these land use changes may increase wetland midstories densities including invasive shrub species. As part of this talk, we indicate how municipalities may support development that better protects headwater wetlands to ensure important benefits are provided in the future.	201A	2:30 PM	2:45 PM

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Title	Speaker	Description	Location	Starts	Ends
Co-production of a generalized management strategy evaluation platform to inform fisheries management decision-making in the Gulf	Nathan Vaughan	Determining sustainable fishery catch limits (quotas) is a critical natural resource management decision made annually for many stocks in the Gulf of America (Gulf). It is vital that fisheries managers have the tools they need to produce optimal quota estimates and understand the uncertainty and risks associated with proposed management actions. Management Strategy Evaluation (MSE) is a common approach used to quantify uncertainty, risks, and the overall likelihood of management options achieving desired outcomes. A core requirement of MSE is the availability of an operating model with sufficient complexity to simulate the relevant population, fishery, and management dynamics needed to evaluate the uncertainties and management decisions of interest. Many MSE analyses rely on bespoke operating models developed for a single purpose, generalized open source models focused on data-limited harvest control rules, or advanced spatial ecosystem models that are difficult to translate directly into stock assessment advice. The stock assessment focused MSE R package SSMSE was developed to operationalize stock synthesis assessment models used in the Gulf directly as MSE operating models. We will present our ongoing co-production effort to expand SSMSE capabilities to capture the full fishery and management complexity present in the Gulf and discuss the benefits and challenges of a real-time development workflow that aims to support critical management decision-making needs as they arise. Our work highlights the value of generalized model development that allows our ongoing analyses to be easily parallelized across multiple species simultaneously. We will review key management questions currently being evaluated, including the impact of recreational removals survey bias, fishery sector allocations, episodic red tide mortality, and harvest control rules on fishery quotas and population sustainability.	204A	2:30 PM	2:45 PM
CANCELED TALK CivicScape: Bridging Data with Civic Engagement in the Classroom	Nick Okafor	trubel&co, a leader in data-driven civic and climate education, has developed CivicScape, an innovative platform that equips educators to bring local, relevant, and data-informed learning into their classrooms, transforming public climate and civic data into classroom-ready, place-based lessons with no technical background required. Through our expert-designed platform and AI Co-Pilot, teachers can quickly design standards-aligned lessons using local datasets on heat, flooding, air quality, housing, and cultural heritage. Students engage in interactive mapping and data storytelling, transforming neighborhood data into insights that drive civic action and environmental stewardship. This session highlights trubel&co's leadership in bridging the gap between complex scientific data and accessible classroom practice, ensuring educators are empowered to advance climate literacy, place-based learning, and 21st-century skills. Session objectives include: Showcase trubel&co's methodology for translating complex climate and civic data into classroom-ready activities that build student civic and environmental literacy.Provide teachers with practical tools and strategies to integrate local datasets into standards-aligned lessons in diverse educational contexts. Identify research and practice gaps in place-based climate education that CivicScape helps to address Attendees will leave with actionable frameworks, lesson ideas, and insights from trubel&co's extensive experience in scaling data civics across schools. This work directly aligns with ESIP's theme, "Bridging Divides: Data, Technology, Community," by demonstrating how expert-led educational innovation can connect open data, technology, and community knowledge to advance climate literacy, cultural heritage awareness, and civic engagement.	203B	2:30 PM	2:45 PM

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Title	Speaker	Description	Location	Starts	Ends
Nature-Based Solutions along the Gulf: Unpacking Mobile's Naturescapes	Anouk Fransen	Nature-Based Solutions (NBS) are increasingly recognized as critical means to address climate change and biodiversity loss simultaneously. While these interventions gain traction among governments, businesses, investors and civil society, we lack an understanding of how these individual interventions add up in urban regions. NATURESCAPES, an European funded transdisciplinary research project involving universities, consultants and NGOs, aims to address this gap by working on the ground in twelve international cities in the European Union, Latin America and the United States of America. NATURESCAPES aims to understand how collections of Nature-based Solutions (NBS) - ''Naturescapes'' - interact and produce unique and potentially transformative outcomes for both nature and society. Working in cities along the Gulf coast including Mobile, Fort-De-France and Cartagena, we are deepening our understanding on how NBS interact and whether the whole becomes greater than the sum of its parts. During this session, we will zoom in on Naturescapes in Mobile, unpacking how a diverse range of Naturescapes are generating transformative change for the future and the lessons we can learn from them for the wider region.	204B	2:30 PM	2:45 PM
Improvements to salt marsh shoreline mapping and shoreline change analysis	Aaron Bland	Salt marshes are critical habitats, but their persistence is threatened by relative sea level rise and erosive forces. To predict the fate of salt marshes, salt marshes are frequently mapped and tracked over time. There are many approaches to mapping salt marsh shorelines, but it is not clear how the underlying uncertainties associated with each mapping approach affect estimates of shoreline change. Furthermore, mapping technologies and data repositories have rapidly improved, but the underlying data uncertainties have been poorly described.Our work demonstrates how various approaches for mapping salt marsh shorelines affect shoreline change analyses. First, we compare various mapping approaches by characterizing their underlying errors. Next, we model scenarios of marsh shoreline change to examine how shoreline change estimates would differ by mapping approach under various scenarios. Finally, we compared shoreline rate estimates as determined from high-precision, in-field monitoring versus coarser, desktop-based approaches. Therefore, we specify the tradeoffs between mapping approach and quality of shoreline change estimates, helping end-users identify approaches most suitable for their local erosional environment. We synthesize and share these findings as a decision support tool to guide users toward site-specific, cost-effective monitoring of marsh shoreline change.	201B	2:30 PM	2:45 PM

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Title	Speaker	Description	Location	Starts	Ends
From Watermen to Volunteers: Collaborative Oyster Restoration in Mobile Bay, AL	Kayla Boyd	Oysters are a vital species in estuaries; providing shoreline protection, water filtration, and biodiversity support. Mobile Bay has seen its oyster populations decrease by over 80% from historic levels. Despite years of restoration efforts—primarily focused on shell and limestone cultch plantings—larval recruitment has been insufficient to establish self-sustaining reefs. Mobile Baykeeper is implementing a comprehensive approach to restoration that combines citizen science, industry, and academia to create a program driven by the community. The Mobile Baykeeper Oyster Restoration program addresses two main bottlenecks to oyster restoration: (1) the limited availability of restoration-grade oysters, and (2) the scarcity of permitted sites for effective deployment. The program also focuses on addressing source–sink reef dynamics through two complementary projects. The Intertidal Oyster Planting project will create 200 rigorously monitored larval source reefs in tidal creeks in the Mississippi Sound and lower Mobile Bay. These reefs will be stocked with adult oysters donated or purchased from farms across Alabama. To address the decline of the reef in the mid- to upper Mobile Bay, where tidal marshes have largely disappeared, the Oyster Keeper project places restoration in the hands of the community by utilizing homeowner piers to host adult oysters, which function as protected larval source reefs. These reefs will send larvae to set on breakwaters and bulkheads in the surrounding area while also providing homeowners with an opportunity to connect with their watershed through data collection and oyster maintenance. By integrating community engagement programs with industry involvement, this program aims to establish a robust and resilient oyster restoration community in Alabama.	201C	2:30 PM	2:45 PM
Panel Discussion 2: Nature Based Solutions for Compound Flooding in Gulf Coast Estuaries	Julia Cherry	Panel discussion part 2 for Nature-Based Solutions for Compound Flooding in Gulf Coast Estuaries: Advancing Modeling and Decision-Making Evaluation Plan session. This panel will engage session speakers in a discussion about refining flood models with considerations of the complexity of model inputs, including biological, ecoloigcal, and socio-economic, data.	204B	2:45 PM	3:00 PM
Quantifying fisheries habitat enhancement of living shorelines	Kelsey Hofheinz	Living shorelines offer ecological advantages over hard armoring, including habitat enhancement for fisheries. We used underwater video sampling to compare fisheries populations across restored seascapes and adjacent controls at two living shorelines in Pensacola Bay. Fisheries species, including mangrove snapper, sheepshead, and mullet, are abundant at the site. From 549 replicate 10-minute videos, we found a far higher probability of encounter of multiple fisheries species on restored habitats within the seascape compared to adjacent unrestored areas, indicating significant habitat enhancement. Density values derived from our videos will allow us to calculate the production enhancement resulting from these restorations and the impact on fishery populations. Demonstrating the habitat enhancement values of public restoration projects will help guide future projects to maximize valuable fisheries habitat, foster a greater appreciation for living shorelines, and encourage broader public support and uptake.	204A	2:45 PM	3:00 PM

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Title	Speaker	Description	Location	Starts	Ends
Oyster Restoration in Mobile Bay: Current Status and Future Direction	Amy Hunter	The Alabama Department of Conservation and Natural Resources (ADCNR) Oyster Resilience Project aims to enhance oyster reef restoration success in southwestern Mobile Bay, Alabama. Using Deepwater Horizon Natural Resource Damage Assessment (DWH NRDA) Funds, this project aims to increase oyster abundance and resilience by constructing habitat and increasing connectivity within that habitat through larval transport. Previous restoration efforts provide a basis of knowledge. This work provides the opportunity to build on those efforts. By considering all aspects of the current oyster fishery in Mobile Bay and optimizing as many variables as possible, we improve the chances of restoration success and reef resilience. The project team's long-term goal is to deploy self-sustaining Restoration Units (RUs) that coalesce into naturally functioning reefs. Data collection on key parameters will be combined with novel RU designs and portable larval production technology as needed to optimize site selection and function. We use a multifaceted approach to restoration of the area: 1) ground-truthing side-scan sonar data to identify available hard bottom at 2–4 m depth; 2) conducting a two-year study of natural water quality and larval supply; 3) designing RUs and determining the most effective deployment layout; 4) creating centers for oyster larval production in situ; and 5) development of methods for managing oyster drill predation. As information is analyzed and the sites with the best qualities for restoration are identified, the historical presence of oyster drill predation will be considered. Our work will evaluate and incorporate predator management strategies into our best practices to address this persistent threat to restoration efforts. By considering a multi-factor approach we hope to maximize the success of restoration efforts by creating a sustainable and resilient network of high-vertical relief brood (source) reefs linked by larval transport to sink reefs.	201C	2:45 PM	3:15 PM
Good Things Come in Small Pixels: Using NOAA's 1-Meter Land Cover to Power Coastal Management	Nate Herold	Current, accurate mapping of land cover conditions (and change through time) can provide key insights to managers and better support coastal management, flood risk and environmental assessment, green infrastructure and land use planning, and more. For over two decades, NOAA's Office for Coastal Management has produced consistent, accurate land cover and change information through its Coastal Change Analysis Program (C-CAP) available on the Digital Coast. This presentation will focus on progress being made to bring the Coastal Change Analysis Program (C-CAP) framework to the local level and NOAA's vision for 1-meter land cover monitoring nationwide. These next generation products, driven by AI mapping technologies, offer a leap in detail and precision over past national data sets, at scale. We will discuss data and information products that have been produced to date (Texas and Florida), areas of data development in progress (Alabama, Mississippi, and Louisiana), as well as examples of just some of the various applications this information can support.	201B	2:45 PM	3:00 PM

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Title	Speaker	Description	Location	Starts	Ends
The Gulf Ecosystem Initiative (GEI): Successes, Barriers, and a Path Forward for Regional Synthesis	Caitlin Young	In 2022, the RESTORE Science Program launched the Gulf Ecosystem Initiative (GEI), a five-year pilot program to support dedicated Gulf of America (formerly Mexico) scientific synthesis in partnership with the National Center for Ecological Analysis and Synthesis (NCEAS). Now entering its fourth year, GEI has yielded critical insights into the unique needs of Gulf researchers and natural resource managers engaging in complex synthesis science. This presentation will review the strategic rationale for this investment and highlight key outcomes from GEI working groups and postdoctoral scholars. We will explore programmatic successes, including NCEAS's development of targeted facilitation and training in data management, streamlining of the application process, and integrating resource managers into working groups. We will discuss how artificial intelligence is increasingly incorporated into working group practices and how working groups are using it to rapidly complete literature reviews and meta-analyses typically undertaken at the beginning of a project. Concurrently, we will examine barriers to participation identified through applicant feedback, mainly the geographic challenge of NCEAS's California location and the lack of salary support for researchers. Collectively, the lessons learned from the GEI could serve as a blueprint for the essential characteristics and support structures required to establish a future Gulf-focused synthesis center.	201D	2:45 PM	3:00 PM
Nature-Based Solutions in Moss Point, Mississippi: Feasibility Study Using 2D Modeling For the Development of Stormwater Parks	Julia Mudd	Grand Bay National Estuarine Research Reserve (GNDNERR) is collaborating closely with the underserved community of Moss Point, MS, and a technical team to design and plan for the implementation of community stormwater parks to reduce flooding and nonpoint source pollution. This project explicitly engages an underserved community that experiences disproportionate flooding impacts. In the small city of Moss Point, MS, minorities make up 78.1% of the total population, median household income is $42,173, and 29.93% of residents live in poverty (U.S. Census Bureau, 2016-2020). The preliminary project objective includes determining the feasibility and flood reduction impacts of stormwater parks at three different sites. The potential stormwater park sites in Moss Point, MS include Khayat Park, St. Joseph's Church, and the Rose Drive Connection Site. Preliminary HEC-RAS 2D modeling results indicate that the stormwater storage and habitat restoration projects would reduce floodwaters between 1-2 inches in local residential neighborhoods and up to 3-4 inches in the vicinity of the restoration projects during the more frequent storms (1-year, 24-hour rainfall events). Additionally, a maximum flood reduction of up to 5-6 inches was seen in one of the more flood-prone neighborhoods when two of the projects were implemented in tandem. The projects would increase public access to the natural history of Moss Point, as well as enhance and restore ecosystem services that support vulnerable populations in coastal communities, including coastal flood protection, coastal erosion reduction, and improved water quality and management.	202A	2:45 PM	3:00 PM

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Title	Speaker	Description	Location	Starts	Ends
Application of a Coastal Habitat Evolution Model to Prioritize Sport Fish Nursery Habitat for Restoration	Jamie Wolanin	Juvenile sport fish such as common snook (Centropomus undecimalis) and tarpon (Megalops atlanticus) rely on nursery habitats that are isolated from large predatory fish, such as coastal ponds in southwest Florida that have limited connectivity to the estuary. However, changes in the hydrology surrounding these ponds driven by increased development, stormwater infrastructure construction, and sea level rise may alter the habitat features that make them desirable to these species. As part of a collaborative, multi-agency project supported by the NOAA RESTORE Science Program, a Habitat Evolution Model is being used to predict potential hydrologic changes around these habitats under various sea level rise scenarios. A GIS-based marsh evolution model calibrated for tropical habitats was used to predict the location of future vegetation cover classes and quantify changes at defined time steps. Two-dimensional HEC-RAS modeling was applied to predict changes in coastal pond flooding frequency, a factor influencing nursery habitat quality for juvenile sport fish. The outputs of these models will be incorporated into a Habitat Assessment and a Conservation Opportunities Index designed to help local government prioritize the conservation of ponds projected to be most vulnerable to future impacts and the most valuable to juvenile sport fish. Additionally, restoration practitioners can apply lessons learned from two nearby successful sport fish nursery restoration projects—Lemon Creek Wildflower Preserve in Charlotte County and Robinson Preserve in Manatee County—to better focus their limited resources on the enhancement or creation of desirable habitats.	201A	2:45 PM	3:00 PM
Assessment of Priority Habitats: Insights from Gulf Con (GOAA Habitat Resources Team)	James Pahl	The Gulf of America Alliance Habitat Resources Priority Issue Team (HRT)'s Habitat Assessment Focal Area was developed within the Gulf of America Alliance to coordinate development and communication of information on a set of priority Gulf Coast habitats (marsh and mangroves, seagrasses, oysters, and deepwater benthic habitats) needed to make informed management decisions, improve disaster response, and develop restoration strategies. This working session of the HRT's Habitat Assessment Focal Area Working Group will discuss how the information and findings presented during multiple habitat-related sessions planned for the first two days of the Gulf Conference apply to the Alliance's current habitat assessment goals, and how they inform the development of the Alliance HRT's 2026-2031 Assessment of Priority Habitats Focal Area work plan. The HRT encourages all conference attendees interested in Gulf habitat assessment to attend and contribute to this conversation. Session Agenda	203A	3:30 PM	5:00 PM
Stories from the Gulf: Communicating Work, Place, and Purpose	Suraida Nanez-James	This interactive session is designed for anyone who wants their work to be understood, not just heard, to spark conversations that create real connection and impact, and to communicate their work effectively in media spaces and public conversations. Session presenters will help participants translate their lived experience and expertise into clear, thoughtful dialogue that others can engage with. Rather than adding more information, participants will learn how to shape their story, clarify their message, and create moments of real understanding and connection. With an emphasis on practical practice through guided exercises and small-group activities, participants will actively test language, refine their message, and experiment with storytelling approaches. Attendees will also have opportunities to listen to some sample stories from Gulf communities via video, learn from one another, and reflect on how personal experience can strengthen credibility and trust. Through these exercises and practical tools, participants will leave with a framework for turning their work into conversations that feel human, grounded, and impactful across interviews, videos, podcasts, or community conversations. Presenters: Suraida Nañez-James, CEO, Gulf Reach Institute and Ocean Co-Lead, American the Beautiful for All Coalition; Ryan Campos, Audio and Communications Lead, Inner Space Center	202B	3:30 PM	5:00 PM

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Title	Speaker	Description	Location	Starts	Ends
Panel Discussion: How Do We Advance and Apply Scientific Synthesis to Restoration Efforts in the Gulf?	Steve Giordano	To gain an appreciation of restoration programs advancing synthesis efforts in other regions (e.g., Chesapeake Bay, Columbia River watershed) and the challenges and opportunities they encountered, we heard two external partners (practitioners) presentations earlier. During the subsequent session(s), regional synthesis presentations presented their understanding of past and present efforts in the Gulf. Finally, with a more comprehensive understanding of the obstacles and opportunities for building a sustainable scientific synthesis capacity, this extended panel discussion/town hall will explore potential ways forward in the Gulf, utilizing lessons learned from regional and national activities. We invite an open dialogue with our invited speakers and the community regarding the role and value of a synthesis enterprise, how to structure monitoring and data management and leverage existing data repositories in the Gulf, what core training and capacity-building activities are needed to create the supporting infrastructure, and how will it be governed and resourced.	201D	3:30 PM	5:00 PM
Emerging Technologies and Issues in Water Resources: What Are They and How Can State Agencies Best Manage Them (GOAA Water Resources Team)		All conference attendees are welcome to join us to discuss how new emerging technologies can transform water resource management, as well as associated issues and challenges. Lightning talks will include presentations on Data Centers, satellite data applications, AI/Machine learning, and other timely topics. Breakout discussions will follow, focusing on barriers, research and resource needs, knowledge gaps, communication strategies, and applications bridging technical advances and management. Session Agenda	204B	3:30 PM	5:00 PM
Water is our Friend: Amphibious Architecture for Flood-Resilient Housing	Elizabeth English	Amphibious construction presents intriguing possibilities in the quest for low-cost, low-impact responses to the impending intensification of weather events and weather-related natural hazards. Forward-looking strategies capable of providing adaptability to future flooding levels that are difficult to quantify in advance are especially needed. Suitable new housing types must be developed for populated regions where fluctuating sea levels and heightened storm activity are expected to intensify flooding. Issues of social and environmental justice must be addressed, particularly when engaging with marginalized populations in underserved communities in international contexts. Amphibious foundation systems allow a house to remain close to the ground with the appearance of an ordinary house, but to rise with rising floodwater and float on the surface until the flood recedes, at which time it returns to its exact original position. This strategy has great potential to benefit flood-threatened populations that currently face the difficult choice of leaving their communities or living in fear of the devastation and trauma that severe flooding can impose. Amphibious retrofits to existing structures function entirely passively, in synchrony with natural cycles of flooding, allowing water to flow where it will rather than attempting to control it. Since the height to which amphibious structures rise is in response to the depth of the water, they enhance resilience by taking both fluctuating sea levels and land subsidence in stride. Amphibious retrofitting is a particularly appropriate strategy for communities with strong connection to place and respect for natural ecosystems. Made practical by their low cost, amphibious retrofits to existing houses can serve as an interim strategy for communities desiring to relocate together as a community, a process that can take many years or even decades to complete; in the meantime, a relatively small investment in amphibiation is sufficient to protect their houses and possessions from flood damage and loss in the intervening years. The presentation will feature case studies of low-cost amphibious prototypes implemented in Louisiana, Ontario, Vietnam and Bangladesh, and visionary projects designed for other flood-threatened locations around the world. Also included will be current projects, designed in partnership with Indigenous communities in Manitoba and Louisiana, that are anticipated to commence construction in summer 2026.	202A	3:30 PM	3:45 PM

Title	Speaker	Description	Location	Starts	Ends
Techniques to Improve Oyster Restoration in Alabama	Lee Smee	Oysters are economically, ecologically, and culturally important, but their populations remain at historic lows despite significant efforts in conservation and restoration. In Alabama, oyster recruitment is low, and traditional cultch planting is routinely insufficient to rebuild oyster populations. Remote setting may provide a path forward, but it is laborious and costly and may also fail when newly planted oysters are rapidly consumed by predators or lost through improper placement in unsuitable conditions. Through a series of experiments, we have found that oyster restoration by remote setting can be improved by selecting appropriate tidal elevations for restoration, using shade to protect oysters from heat waves, and exposing newly settled oysters to predator exudates to encourage them to harden their shells. These findings are applicable to many areas in the Gulf and can lead to new approaches to improve oyster restoration.	201C	3:30 PM	3:45 PM
Use of remote sensing techniques for measuring near-surface currents using unmanned aerial systems and comparisons to hydrodynamic model output in Gal	Vivek Bheeroo	Galveston Bay experiences daily traffic from ships and tankers arriving from the Gulf of America. This region is at high risk for oil spills, and much of the spilled oil accumulates along the ocean surface as slicks. Several physical, biological, and chemical processes influence the fate and transport of these slicks across the bay. The local ocean currents and wave action play a central role in such processes. In this work, we demonstrate the use of remote sensing techniques to measure the near-surface ocean currents from unmanned aerial system (UAS) video by analyzing the Doppler-shifted surface gravity waves. This workflow is implemented based on three-dimensional fast Fourier transform of UAS video using a convenient MATLAB-based package called CopterCurrents (Streßer et al., 2017). The resulting near-surface current maps can be generated over various spatial extents and geometric footprints. These maps are produced for key locations in and around the bay, including the vicinity of the Houston ship channel, the Galveston Bay entrance channel, and the coastal waters of Galveston Island facing the Gulf of America. These large scale, high resolution near-surface current maps can then be used to either improve transport predictions or to help select ocean circulation models that best predict the local hydrodynamics. Quantitative comparisons of the remotely sensed field data with the Northern Gulf of America Operational Forecast System (NGOFS2) will be presented. Additionally, visualizations of the field measurements along with the error metrics will be provided using the Environmental Response Management Application (ERMA) interface.	201B	3:30 PM	3:45 PM
Ecosystem recovery and carbon-water dynamics in the Mobile-Tensaw Delta	Paulo de Godoy Junior	The Mobile–Tensaw Delta, one of the largest and most dynamic wetland systems on the U.S. the Gulf Coast plays a pivotal role in regulating carbon and water fluxes, supporting biodiversity, and providing protection against coastal hazards. However, this complex socio-ecological system is undergoing rapid transformation due to land-use change, vegetation degradation, and increasing climatic stressors such as hurricanes and storms. Thus, this research aims to investigate how land-cover dynamics influence carbon-water exchanges and the ecological resilience of deltaic habitats. Using a combination of remote sensing datasets (MODIS and ECOSTRESS), and modeling approaches, the study quantifies variations in gross primary productivity (GPP), evapotranspiration (ET), and vegetation indices along disturbance-recovery gradients. The results highlight the interplay between vegetation structure, hydrological regulation, and carbon-sequestration potential under restoration and conservation scenarios. By integrating biophysical indicators with resilience and stewardship frameworks, this work contributes to the development of climate-smart strategies for habitat restoration and sustainable management in the Gulf region.	201A	3:30 PM	3:45 PM

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Title	Speaker	Description	Location	Starts	Ends
Sustained Coral Growth in an Outlier Reef System: 32 Years of Stability at East and West Flower Garden Banks National Marine Sanctuary	Kelly O'Connell	The widespread decline of biologically and economically vital coral reefs, often resulting in phase shifts to macroalgal dominance, necessitates the study of resilient outliers. The reefs of Flower Garden Banks National Marine Sanctuary (FGBNMS), located 190 km south of the Texas and Louisiana coasts, have demonstrated exceptional stability over decades. We analyzed a 32-year time series (1992–2024) of benthic community composition (coral, macroalgae, CCA, sponge) using point-count analysis from both random and permanent monitoring stations at East and West Flower Garden Banks (EFGB and WFGB). Our findings reveal sustained high coral cover and growth. Key results show EFGB maintained stable mean coral cover (46% in 1989 to 50% in 2024), while WFGB exhibited a significant increase from 47% to 62%. Species composition remained consistent across the study, indicating that increasing cover was due to the sustained growth of the existing community. Macroalgae showed interannual variability and a slight increase (EFGB: 18% to 24%; WFGB: 13% to 17%), but not degradation-level phase shifts. These results contrast sharply with widespread Western Atlantic/Caribbean reef degradation, establishing the reefs of FGBNMS as a critical example of sustained coral dominance and reinforcing the value of consistent, photo-based, long-term monitoring. Crucially, the FGBNMS represents a globally significant reference site to actively study the mechanisms of resilience against thermal and anthropogenic stress in the face of ongoing environmental change.	204A	3:30 PM	3:45 PM
Wetland Connections	Cindy Wilems	Wetland Connections is a school-year-long program that connects 6-12th grade students to the wetland ecosystems around Galveston Bay with a series of classroom and field activities concerning the biology and ecology of wetlands, data collection, nature journaling, conservation engineering principles, and water quality parameters while imparting a sense of ownership and responsibility for the local ecosystem. Designed to give students a glimpse into wetland and environmental careers via multiple touch points during the school year, Wetland Connections reaches over 1,700 students annually. During this session, we will share a programmatic overview, including the evolution of the program over the years, program funding, evaluation measures, lessons learned, and the program's long-term sustainability and future aspirations.	203B	3:30 PM	3:45 PM
CANCELED: Phytoremediation Potential of Nerium oleander for Heavy Metal–Contaminated and Saline Soils	Zavier Smith	Soil contamination by heavy metals and salinity intrusion are major environmental challenges that threaten agricultural productivity and ecosystem health. Nerium oleander, a salt- and drought-tolerant shrub, has shown potential for use in phytoremediation of degraded soils. This study aimed to evaluate the capacity of N. oleander to remediate soils co-contaminated with heavy metals and salinity. Two treatment groups were established: (1) soils amended with arsenic (As), zinc (Zn), and cadmium (Cd) at three concentrations (10, 50, and 100 ppm) combined with sodium chloride (NaCl) to simulate salt intrusion, and (2) soils amended with the same heavy metals without NaCl. Plants were grown in pots for the experimental period, and soil and plant samples were collected at harvest. Metal concentrations in roots, stems, and leaves were analyzed to assess uptake, accumulation, and translocation patterns. We anticipate that N. oleander will demonstrate high tolerance to both heavy metals and salinity, with greater accumulation of As, Zn, and Cd in roots than in stems and leaves, suggesting its role as a phytostabilizer. The presence of NaCl is expected to alter metal bioavailability, potentially affecting uptake and translocation, with variable responses depending on the metal type and concentration. These findings are expected to highlight the potential of N. oleander for use in the remediation of heavy metal–contaminated and saline soils. The study contributes to understanding the plant's resilience and its capacity to mitigate co-occurring soil stressors, offering a sustainable approach for land restoration in affected regions such as coastal areas.	202A	3:45 PM	4:00 PM

Title	Speaker	Description	Location	Starts	Ends
UAS-based infrared imaging for nighttime nearshore current mapping under varying environmental conditions	Mu-Jung Lee	Unmanned aerial systems (UAS) carrying long-wave infrared (LWIR) cameras enable mapping of near-surface currents during low-light and nighttime conditions. We use LWIR video from a UAS over nearshore waters at Texas City Dike, Texas, to estimate surface currents and compare them with in situ Acoustic Doppler Current Profiler (ADCP) measurements. Two approaches are applied. At night, billow-like thermal patterns appeared on the sea surface. After suppressing wave-related signals with locally adaptive thresholding, these temperature features can be tracked using Particle Image Velocimetry (PIV), yielding coherent current vector fields. At the ADCP site, PIV-derived mean velocities closely match the observations, showing that thermal structures act as effective tracers. Near dawn, as surface temperature becomes more homogeneous, wave signatures become the primary tracer. Under these conditions, CopterCurrents (Streßer et al., 2017; Bae et al. 2025), a spectral method based on Doppler wave dispersion, is applied to the LWIR imagery. Prior to this, low-temperature striping that interferes with CopterCurrents is filtered out using Proper Orthogonal Decomposition (POD), which clarifies wave signals and improves the resulting vector maps. The mean current estimates again agreed with the ADCP data in both magnitude and direction. These results show that UAS-based LWIR imaging can resolve coastal surface currents under varying environmental conditions. PIV tracking of thermal tracers enables nighttime current estimation, while CopterCurrents remains effective when only wave patterns are visible. Together, these approaches support continuous monitoring of nearshore hydrodynamics using UAS platforms. Acknowledgment: This work is a result of research funded by the Texas General Land Office's Oil Spill Prevention and Response Program under Award No. 24-016-004-D951. References Bae, S.B., Chang, K.-A., Huang, H.-Y., Socolofsky, S.A. (2025). Comparison of surface current measurement techniques and observations of tidal Inlet dynamics using unmanned aerial systems. Journal of Atmospheric and Oceanic Technology, 42, 1403-1418. https://doi.org/10.1175/JTECH-D-24-0118.1 Streßer, M., Carrasco, R., & Horstmann, J. (2017). Video-Based Estimation of Surface Currents Using a Low-Cost Quadcopter. IEEE Geoscience and Remote Sensing Letters, 14(11), 2027–2031. https://doi.org/10.1109/LGRS.2017.2749120	201B	3:45 PM	4:00 PM

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Title	Speaker	Description	Location	Starts	Ends
Ranging Patterns and Habitat Use of Dolphins over the West Florida Shelf	Krystan A. Wilkinson	Dolphins are key apex predators in marine ecosystems and serve as sentinels for ocean health. However, beyond studies in bays, sounds, and estuaries, relatively little research has focused on dolphins inhabiting offshore waters. Lack of baseline information limits our ability to effectively conserve and manage both coastal and continental shelf dolphin species. To improve our understanding of offshore dolphin movement behavior, we deployed satellite-linked tags on 20 dolphins from three different species (14 Atlantic spotted dolphins, 5 bottlenose dolphins, and 1 rough-toothed dolphin) using catch-and-release and remote, pole-mounted Tag Attachment Device (TADpole) methods. The tagged dolphins were tracked for up to 128 days and 18 of the tags successfully transmitted location and behavior data for further analysis. Atlantic spotted dolphins and bottlenose dolphins showed similar levels of site fidelity, primarily ranging between Tampa Bay and Charlotte Harbor, and considerable distribution overlap (Bhattacharyya Coefficient = 0.96, 95% CI: 0.77-1.0). While bottlenose dolphin overall ranging areas (95% UD) were nearly three times larger than Atlantic spotted dolphins, this difference was not significant at $\alpha = 0.05$, but the biological difference may be important. Atlantic spotted dolphins and bottlenose dolphins used habitats approximately 65 km from shore (ranges = 25.3-145.7 km, 20.1-144.6 km, respectively) and waters around 36 m deep (ranges = 17-71 m, 16-66 m, respectively). After accounting for individual variation, we found no evidence for an effect of species on distance from shore nor seafloor depth use. Dive depths and durations were similar for Atlantic spotted dolphins and bottlenose dolphins, but was less for the rough-toothed dolphin. All tagged animals exhibited dives throughout the water column, including to the seafloor. Our observations suggest more fine-scale stock structure may be present over the West Florida Shelf than previously recognized.	204A	3:45 PM	4:00 PM
BRACKISH: Biodiversity, Relationships, and Aquatic Chemistry Knowledge in Saline Habitats	Brianna Andrews	BRACKISH (Biodiversity, Relationships, and Aquatic Chemistry Knowledge in Saline Habitats) was a three-day, place-based education program that helped participating eighth grade students become more aware, knowledgeable, and appreciative of the area in which they live. The program took place at the Grand Bay NERR (GNDNERR), an estuary located in Moss Point, MS with approximately 18,000 acres of protected coastal, terrestrial, and wetland habitats. The overall goal of this program was to utilize place-based learning to improve science and environmental literacy in students from Pascagoula and Moss Point, Mississippi. To address the project goal, the program was split into three parts. On the first day, the program team visited participating schools, providing students with basic knowledge of the GNDNERR, species' adaptations, and the importance of water quality and other abiotic factors in the survival of estuarine organisms. During the second day, students were given the opportunity to explore the estuary aboard the GNDNERR's 36ft passenger vessel, Ms NERR. While visiting, students utilized scientific instruments (i.e., YSI Pro-Solo handheld devices, refractometers, secchi discs, dissolved oxygen kits) to gather water quality data and sampled species with various nets (i.e., trawl, cast and dip nets) that could later be identified with field guides created by the BRACKISH team. On the final day of the program, the program team returned to the school where students were introduced to mock role play scenarios that were directly related to water quality issues in their community and participated in student-led discussions. This activity challenged them to critically think about human impacts on the environment and encouraged them to work together to find solutions to the environmental problems. As a result of this program, there was significant improvement in post-test scores for most participating schools, suggesting that students retained and applied environmental science concepts after participating in the program. The success of the program has led to it being integrated into GNDNERR's regular education programming, where NERR education staff bring BRACKISH lessons to K-12 audiences. Program implementation, lessons learned, and evaluation results will be discussed during this session.	203B	3:45 PM	4:00 PM

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Title	Speaker	Description	Location	Starts	Ends
Lateral fluxes of dissolved carbon from an intertidal salt marsh in the Barataria Basin, Louisiana, USA	Songjie He	Saltmarshes are biogeochemical hotspots storing carbon in sediments and in the ocean following lateral carbon export. This transfer of carbon and alkalinity from the land to the ocean represents an important process in the global carbon cycle. Here, we measure lateral carbon fluxes – import and export of carbon via tidal channels – in a saltmarsh in the Barataria Basin in Louisiana and evaluate the impact factors on lateral carbon fluxes. We hypothesized that porewater carbon export is an important process for blue carbon loss which contributes significantly to lateral carbon flux. To test this hypothesis, environmental parameters such as salinity, temperature, pH, dissolved oxygen, fluorescent dissolved organic matter, as well as carbon concentrations, including dissolved inorganic carbon (DIC), dissolved organic carbon (DOC), and total alkalinity (TA) concentrations were measured since 2021 for lateral carbon flux calculations. Radon concentrations were measured continuously for over 24 hours during five field trips to evaluate porewater carbon export. Our preliminary results showed that porewater carbon exports contributed significantly to lateral carbon fluxes. Lateral carbon fluxes mirrored the water flux pattern and positive (ebb-directed) lateral carbon fluxes were mostly driven by higher carbon concentrations during ebb flow associated with porewater drainage versus flood flow. Lateral flux of DIC was generally higher than TA flux, which has significant implications for coastal acidification and carbon budget. This exported TA represents a long-term carbon sink in the ocean while the ratio of TA/DIC impacts the carbonate chemistry of coastal waters.	201A	3:45 PM	4:00 PM
Investigating fertilization rate potential of hybrid Eastern oysters in Texas	Kate Gomez-Rangel	The eastern oyster, Crassostrea virginica, is a valuable benthic organism that plays a crucial role in ecosystem services and economically supports commerical fisheries and aquaculture industeries. In the Gulf coast of Texas, genetic studies have revealed significant insights into the population structure and hybridization patterns of these oysters. But research on the reproductive dynamics, viability, and genetics of the hybrid eastern oysters is limites, leaving significant gaps in scientific knowledge about these organisms. Therefore, evaluating hybrid eastern oysters is essential to determine their suitability for aquaculture in Texas and to inform science-based management and conservation strategies for sustaining the oyster population on the coast. The Gulf offers a unique environment along the Texas coast, characterized by varying salinity and temperatures gradient across multiple bay. Previous research indicated that eastern oyster in Texas are divided into two genetically distinct populations adpated to disntict environmental tolerances, including a genetic transition zone where naturally occurring hybrid oyster can be found. This project investigates the fertilization rates of larval hybid oysters. Hybridization is a tool for enhancing viable aquaculture production and requires an understanding of the broodstock genetic structure, as well as monitoring the progeny viability and fertility. The findings of this research will provide essential insights to inform viable selective breeding programs in Texas aquaculture and support local conservation strategies and fishery management plans for these important species.	201C	3:45 PM	4:00 PM

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Title	Speaker	Description	Location	Starts	Ends
National Wildlife Federation's Resilient Schools and Communities - Change for Channelview, TX	Marya Fowler	Launched in response to Hurricane Harvey, National Wildlife Federation's (NWF) Resilient Schools and Communities (RiSC) program is designed to help local communities better understand and address their vulnerability to climate change. This student led program raises awareness of climate science and also builds community resilience by designing nature based solutions to help mitigate local flooding, reduce storm water runoff and improve water quality. In Channelview, Texas, Channelview High School students collaborated with NWF's RiSC program, working in partnership with Channelview ISD and the Channelview Health and Improvement Coaltion (C.H.I.C.) to create a pocket prairie at the Channelview Sport Complex. The beauty of the project lies in the collaboration. It was chosen, implemented and funded in part by the community. Carolyn Stone, the Founder of C.H.I.C. said it best, " Through teamwork, challenges, and a deep love for our community, our pocket prairie how larger environmental issues can be addressed through small scale projects that can be replicated in other community areas or at our homes to shape a more sustainable and hopeful future. This is more than a garden. It's a movement. It's change for Channelview." Nature based solutions to climate change help communites become more resilient to flooding. Through the RiSC program's place and project-based framework, NWF engages teachers and youth from Title I public schools and their communities in the Houston area in climate resilience education. Teams of students, teachers and communtiy members study their watershed, conduct community vulnerability assessments and community surveys, campus site assessments and they engage in inquiry based field experiences to inform the selection of a green infrastructure project for their community. RiSC is a 2 year program. First year projects are campus based and second year projects are community based.	203B	4:00 PM	4:15 PM
Rapid Intensification of Hurricane Ian in Relation to Anomalously Warm Subsurface Water on the Wide Continental Shelf	Yonggang Liu	Hurricane Ian rapidly intensified from Category 3 to 5 as it transited the wide West Florida Shelf (WFS). This is ascribed to heating by the anomalously warm shelf waters, despite the water depth being shallow when compared to the thicker, mixed layer areas of the deeper ocean. By examining temperature from long-term moorings, we found that the sea surface and subsurface temperatures exceeded the climatologies by 1–2°C and 2–3°C, respectively. Additionally, these anomalously high temperatures in summer/fall of 2022 were related to the absence of Gulf of Mexico Loop Current interactions with the WFS slope at its “pressure point”. Without such offshore forcing to induce an upwelling circulation, the warmer waters on the shelf were not flushed and replaced by colder waters of deeper ocean origin. This work highlights the importance of subsurface temperature and ocean circulation monitoring on shallow continental shelves, which are largely overlooked in hurricane-related ocean heat content observational programs.	201B	4:00 PM	4:15 PM

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Title	Speaker	Description	Location	Starts	Ends
CANCELED: Phytoremediation Pilot Study in a Mississippi Community Impacted by Petrochemical Refining.	Naira Ibrahim	Communities in Mississippi located near petrochemical refining facilities face ongoing risks from heavy metal (HM) contamination in soils, which threatens both environmental quality and food safety. Phytoremediation offers a sustainable and low-cost strategy to reduce these risks.This pilot study evaluated the phytoremediation potential of Nerium oleander and cabbage (Brassica oleracea) under natural field conditions in a community impacted by petrochemical activities. Plants were cultivated directly in contaminated soils, and heavy metal (Pb, Cd, Zn, and Ni) accumulation in roots and shoots was quantified using Inductively Coupled Plasma OpticalEmission Spectroscopy (ICP-OES).Results indicated that N. oleander exhibited a significantly higher capacity for heavy metal uptake compared to cabbage, particularly in root tissues, demonstrating its strong potential for stabilizing and reducing soil metal burdens in situ. Cabbage, by contrast, accumulated relatively lower concentrations of metals, indicating limited utility for remediation but supporting its roleas a safe food crop when grown in soils that have been treated or partially remediated.The field-based findings highlight N. oleander as an effective candidate for phytoremediation strategies in petrochemical-impacted areas. Beyond its ability to reduce the transfer of contaminants into the food chain, its ornamental value offers additional benefits for community acceptance and landscape improvement. This study underscores the importance of field-scale validation of phytoremediation technologies and provides a foundation for future research exploring plant–microbe interactions and long-term impacts on soil health.	202A	4:00 PM	4:15 PM
LISTEN Insights on Gulf Soundscapes, Chronic Noise, and Restoration of the Open Ocean Ecosystem	Melissa Soldevilla	The Gulf of America oceanic ecosystem is one of the most heavily industrialized, and the noise produced by these human activities can affect the Gulf soundscape and its living marine resources. Marine taxa that are sensitive to and rely on sound for survival, including coral reef ecosystems, invertebrates, fish, sea turtles, and marine mammals, can experience acute and chronic impacts from human noise sources. For offshore megafauna, including 20 cetacean species, reducing noise impacts is one of the few ways to support recovery following the Deepwater Horizon (DWH) oil spill. Long-term passive acoustic recorders have been deployed since 2010, with a Gulf-wide expansion of monitoring efforts in 2020 under the LISTEN project, to provide the foundational data to support noise reduction project planning and monitoring. Over a decade of noise and marine mammal recordings are now providing insights into Gulf soundscapes, chronic noise drivers, marine mammal density, and trends. This includes evidence of long-term odontocete density declines, species-specific hotspots in association with oceanographic features, and improved understanding of the acoustic footprints of human activities. The integration of the extensive acoustic data collections with publicly available industry activity data (AIS and energy permitting reports) is yielding insights into the levels and spatiotemporal distribution of noise contributed by shipping traffic and airgun survey activity. Further, the combination of information about the sources driving low-frequency noise hotspots with new knowledge of density hotspots for acoustically-sensitive marine mammals (e.g., sperm, Rice's, and beaked whales) highlights areas where addressing noise impacts may be most beneficial. These findings provide crucial data needed to plan and implement pilot projects in collaboration with industry as part of a DWH Restoration project aimed at reducing noise impacts to marine mammals injured by the 2010 DWH oil spill. These projects are ripe for discussions of how anthropogenic noise may be impacting additional marine taxa, how this affects trophic cascades and potential indirect effects on marine mammals through their prey, and how to best engage with industry stakeholders to find voluntary solutions to reduce noise in the Gulf.	204A	4:00 PM	4:15 PM

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Title	Speaker	Description	Location	Starts	Ends
Factors Influencing Oyster Tissue Degradation in Quarantined Shell Piles for Restoration.	Chelsey Hill	Oysters play a critical ecological and economic role in bays and estuaries. They filter large volumes of water daily, provide habitat for aquatic organisms, and are an economically important commercial fishery. Additionally, the health of oysters is important to the ecosystem of the bay, as they serve as a viable indicator species for water quality changes. To minimize risks of introducing pathogens back into the environment, oyster shell recycling programs quarantine recycled shells before placing them back into the bay as part of restoration efforts. This study evaluates how temperature and humidity influence the degradation of residual oyster tissue by simulating how unshucked oyster shells are cured (or, “quarantined”) through the recycling pathway. We compare the results of two studies (one completed between 2022-2023 and the other is ongoing) to better understand the rates at which tissue degrades based on location within quarantine pile and the orientation of the shell halves. Data collected during the 2022-2023 study suggests expedited degradation within the interior compared to the top of the curing piles. However, the effects of pile alteration (or “rotation”) and shell orientation during deployment were not fully examined. The current study incorporates updated oyster shell recycling practices and assesses seasonal variation, shell orientation, and the effects of curing pile rotation on degradation rates. Findings from this research will inform a science-based Best Management Practices (BMPs) document to guide future oyster shell quarantine protocols in Texas.	201C	4:00 PM	4:15 PM
Vertical carbon flux in two Mississippi coastal marshes with contrasting hydrology	Francis Driscoll	Intertidal marshes serve as important storm buffers, wildlife habitat, and a source of economic value. Central to coastal biogeochemical processes, they play a disproportionately large role in the global carbon cycle. These systems are experiencing large-scale land loss due to sea level rise, land use change, and human alteration of coastal rivers, with some of the highest rates observed along the Gulf Coast. High primary productivity and low oxygen soils enable long-term sequestration of atmospheric carbon, defining them as blue carbon ecosystems. However, anaerobic respiration in the sediment can release methane (CH4), remineralizing a portion of this stored carbon. Due to a high global warming potential, CH4 emissions can offset the cooling effect of CO2 uptake, particularly over the short-term, making the balance between these fluxes critical to a marsh’s net radiative impact. In saline environments, sulfate reducers typically outcompete methanogens, suppressing CH4 emissions in salt marshes. Yet, recent studies suggest that methanogens can coexist with sulfate reducers, with vegetative substrate potentially influencing this dynamic. In coastal Mississippi, the Pascagoula River estuary – fed by the largest undammed river by volume in the contiguous United States – and the Grand Bay estuary – cut off entirely from its founding river – lie less than 10 miles apart but demonstrate contrasting hydrological regimes. Using long-term, seasonal deployments of automatic flux chambers at these sites, we present the first known analysis of both carbon dioxide and methane vertical flux in coastal Mississippi. Here, we contrast measured fluxes across sites and vegetative cover to evaluate the drivers of greenhouse gas exchange in Mississippi coastal marshes. These findings inform how vegetation and hydrology shape greenhouse gas dynamics, informing assessments of land loss, restoration, and management in Gulf Coast marshes.	201A	4:00 PM	4:15 PM

Title	Speaker	Description	Location	Starts	Ends
Skin Microbiome Analysis in Stranded Dolphins from an Unusual Mortality Event in the Mississippi Sound	Mark Lawrence	In 2019, an unusual mortality event (UME) occurred in common bottlenose dolphins (Tursiops truncatus) in the Mississippi Sound due to exposure to prolonged low salinity. Lesioned and non-lesioned skin samples from four dolphins that died during this UME were collected to characterize the microbiome and potentially determine associations of bacterial types with freshwater lesions. For comparison, microbiome analysis was also conducted on skin samples from two other stranded dolphins from the Mississippi Sound (not associated with the 2019 UME). 16S metagenomic libraries were prepared from nine skin samples, and the V3 and V4 variable regions were amplified and sequenced. Clustering of the sequence reads produced 1,043 operational taxonomic units (OTUs) at the genus level from the nine samples. Based on normalized read counts, the genera Asinibacterium, Alistepes, and Barnesiella had significantly increased abundance in skin samples from dolphins with freshwater lesions compared to dolphins without lesions. Other genera that had large fold increased abundance in dolphins with freshwater lesions included Aeromomas, Arcobacter, Bacteroides, Flavobacterium, and Vitreoscilla. Intersection analysis showed that paired samples from the same dolphin (lesion versus non-lesion skin samples) shared a large number of common OTUs. The seven samples from dolphins with freshwater lesions also shared a large number of common OTUs, as did the two samples from dolphins without skin lesions. These results indicate that lesioned skin and non-lesioned skin samples from the same dolphin shared more similarity than lesioned samples from different dolphins. Furthermore, the seven samples from dolphins with freshwater lesions were similar to each other, as were the two samples from dolphins with non-lesioned skin. In summary, dolphins have variation in their individual skin microbiomes, but their skin microbiomes have similar changes following prolonged freshwater exposure.	204A	4:15 PM	4:30 PM
Assessing potential risks from WWII shipwrecks by filling knowledge gaps in NOAA's RULET database and simulating oil spill fate and transport	Ainsley Vanderhyde	Sunken World War II vessels have begun to corrode and in some cases have started to leak heavy bunker fuel, potentially causing shoreline oiling events. In 2010, NOAA, the Coast Guard and other partners assessed 20,000 wrecks and identified which wrecks were most likely to still contain significant volumes and to pose a potential threat. The outcome of this effort was a database named the Remediation of Underwater Legacy Environmental Threats (RULET), created for response continents planning to identify polluting wrecks that might negatively impact ocean ecology and economy. Utilizing historical evidence, archaeological interpretation and salvage engineering, combined with pollutant modeling, a ranking matrix was made to quantitatively assess ecological and socio-economical risks from potential spills for 87 listed wrecks. Since the initial review in 2013, updated information has been documented on many of these wrecks. These updates include determining wrecks that no longer contain oil, have undergone oil removal actions and/or have been identified as leaking based on satellite imagery analysis or survey observations. This project identifies wrecks with new information, summarizes those reports, and incorporates relevant information to develop an updated risk ranking. For wrecks that have a high risk ranking off the coast of Louisiana, additional fate and transport modeling was conducted using NOAA's Northern Gulf of America Operational Forecast System (NGOFS2) and General NOAA Operational Modeling Environment (GNOME). NGOFS is a high-resolution coastal ocean model that has been operational since 2022. Using GNOME, the effects of seasonality in shelf currents and river flow are examined with respect to regions potentially impacted by a worst case discharge from this vessel. The results of this study can help better prepare response planners when creating contingency plans to prevent and efficiently respond to a spill.	202A	4:15 PM	4:30 PM

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Title	Speaker	Description	Location	Starts	Ends
Discovery Hall Programs: Hands-on, feet-wet education for all!	JoAnn Moody	The field of environmental education has undergone a significant transformation over the past fifty years. In that time, Discovery Hall Programs (DHP) at the Dauphin Island Sea Lab (DISL) has evolved in parallel, continually adapting to emerging scientific knowledge, innovative pedagogical practices, and the changing needs of teachers and students. Rooted in a long-standing commitment to fostering environmental stewardship, the DHP's central goal remains to get students outside, fostering a deeper understanding of and connection to the natural world. Emphasizing Gulf coast ecosystems, students explore native plants in the maritime forest, catch baby blue crabs in the safety of the salt marsh, traverse indigenous shell mounds, and discover how cultural history and the surrounding environment intertwine. While aboard the research vessel or on shore, students hone their skills of observation and data collection, using water quality monitoring kits, probes, sensors, and other scientific tools. Educators discuss local environmental issues, explore how some of those problems can be traced up the watershed, and share the work of DISL scientists addressing some of those hazards. In addition to getting students' feet wet in the field, the programs at DISL have expanded to include a range of STEM-focused experiences that engage learners with the tools and technologies of ocean exploration. Students use the engineering design process to design and build drifters and remotely operated vehicles, investigate deep-sea features using an augmented reality sand table, and analyze the impacts of sea-level rise on coastal ecosystems. These immersive, hands-on activities not only enhance scientific literacy but also promote critical thinking, curiosity, and a sense of place.	203B	4:15 PM	4:30 PM
Simulating the Effects of Increased Salinity and Edge Erosion on Soil Organic Carbon Stability in a Mangrove Encroachment Front	Rebecca Nix	Coastal saltmarshes and mangroves serve as substantial long-term reservoirs of organic carbon. Rising temperatures drive tropicalization, resulting in the northward expansion of Avicennia germinans (black mangroves) into coastal Louisiana. Concomitantly, accelerating relative sea-level rise rates increase inundation, exacerbating edge erosion and saltwater intrusion. These processes potentially alter carbon cycling within coastal wetlands. The goal of this study was to determine how oxygenation and saltwater intrusion impact mineralization rates in mangrove and marsh soils with ramifications for understanding coastal carbon resistance to decomposition ('stability'). We hypothesize that (1) mangrove soils will have lower mineralization rates than marsh soils (high stability) (2) increased salinity will increase mineralization rates more in marsh soils than mangrove soils (3) increasing oxygen (a proxy for erosion) will increase mineralization rates more in marsh soils than mangrove soils. We found that while mangrove soils had higher organic matter (18.5 ± 2.09 %) than saltmarsh (12.9 ± 1.60%) soils, these differences did not translate into higher mineralization rates ($r < 0.5$). Vegetation type did not significantly influence CO_2 production ($p = 0.33$), indicating that carbon stability may not differ between mangroves and saltmarshes. Salinity additions had no positive effect on mineralization ($p = 0.45$). Oxygen additions ($p = 0.0012$) and oxygen additions with salinity additions ($p = 0.003$) increased mineralization in both vegetation types. Results suggest oxygen additions like those from wave action at the coastal fringe generally increase mineralization rates and endanger coastal carbon stores, though mangrove encroachment might not affect coastal carbon stability.	201A	4:15 PM	4:30 PM

Title	Speaker	Description	Location	Starts	Ends
Innovative Deployment, Early Outcomes, and Techno-Economic Analysis of Reefense Modules for Oyster Reef Restoration and Green Shoreline Protection	Eric Slaugh	Degradation of coastal habitats results in significant reductions in ecosystem services and diminishes infrastructure protection against surge and wave activity during extreme weather events. While traditional shoreline stabilization techniques—such as rock revetments and concrete seawalls—offer physical protection, they often lack ecological benefits and adaptability to rising sea levels. In contrast, oyster reef restoration and nature-based shoreline solutions can restore ecosystem services and provide resilient shoreline protection that adjusts to future environmental changes. This abstract presents the design, installation, and initial performance assessment of a Living Shoreline Mosaic™ (LSM™) constructed using concrete Reefense Modules™ at Tyndal Airforce Base, Panama City, Florida. Laboratory testing of the Reefense Modules™ demonstrated at least 70% wave attenuation and facilitated enhanced oyster colonization, indicating both economic and ecological advantages over conventional methods. The presentation will outline the methodology adopted for the deployment of the first full-scale reef, comprising 788 Reefense Modules™, and describe the challenges encountered during installation. Solutions implemented by WSP's project team to address logistical and technical issues will be highlighted, showcasing the innovative approaches that contributed to the successful creation of a unique reef habitat. This abstract also presents the techno-economic analysis (TEA) of potential costs and benefits at three potential sites upon large scale deployment of Reefense Modules™ (i.e., 10 kilometers of shoreline per year) using data gathered from the pilot study at Tyndall Air Force Base. The TEA included all direct costs (the materials, equipment, and labor), indirect costs (the permitting, engineering design, and administration), operating and other associated costs of the a company that owns the Reefense concept, co-benefits for fisheries, tourism, flora/fauna, tidal marshes, and shoreline stabilization, and avoided costs through the elimination of beach nourishment and reduction of property loss via shoreline erosion. The TEA showed that deployment costs were the leading cost driver (40-45% of total cost) for each of the three potential sites, with the equipment and labor costs specifically being the most important components. Future research may focus on lowering the deployment labor costs through implementing newer installation techniques and the lowering the equipment costs through full ownership by the Reefense company of the entire production and deployment processes.	201C	4:15 PM	4:30 PM
Effects of Hurricane Ian on Carbonate Chemistry and Organic Alkalinity across the West Florida Shelf	Songjie He	Severe weather events such as hurricanes can have disproportionately high impact on coastal carbon biogeochemistry and transport but are generally not well understood due to the transient nature of such events. In this study, we investigate the impact of Hurricane Ian on carbon chemistry in Western Florida Shelf (WFS) following landfall on September 28, 2022, near Cayo Costa, Florida. Post hurricane satellite images indicate widespread resuspension and/or terrestrial run-off along the WFS coastline, which will likely impact the carbon chemistry of the shelf waters. The objective of this study is to understand the spatial and temporal changes in dissolved inorganic carbon (DIC), dissolved organic carbon (DOC), total alkalinity (TA), and organic alkalinity (OrgAlk) in WFS immediately after Hurricane Ian and in the subsequent months. Surface water samples were collected for the abovementioned parameters from more than 30 stations in WFS in October 2022 (3 weeks after Ian made landfall), January 2023, and March 2023 along with other ancillary water quality parameters. The DIC and TA varied from 1840 to 2302 µmol/kg and from 1981 to 2641 µmol/kg, respectively, for these three seasons with no significant temporal differences. However, OrgAlk was found to be highest in October 2022, ranging from 84 to 249 µmol/kg, suggesting increased contribution from DOC sources.	201B	4:15 PM	4:30 PM

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Title	Speaker	Description	Location	Starts	Ends
Learning at the Water's Edge: Early Student Data from the Sustainable STEM by the Sea Camp Pilot Study	Rachel Gisewhite	The Sustainable STEM by the Sea (S3) Camp is designed to investigate how Gulf Coast youth engage in coastal data collection, interpretation, and application through immersive, place-based STEM education. The research team will present early findings from the first few months of camp implementation, including student-generated environmental datasets and accompanying educational outcomes. The S3 Camp engages 3rd–8th grade students as active contributors who collect field data on factors like water quality, biodiversity patterns, erosion indicators, and habitat conditions across a variety of coastal environments. Preliminary patterns expected from the first phase include growth in students' scientific literacy, understanding of human–ecosystem interactions, and emerging environmental agency. These outcomes will be examined through student-collected datasets, design-thinking products, teacher reflections, and pre-/post- learning measures. The synthesis of these data will illuminate how hands-on monitoring experiences—paired with problem-solving challenges—support the development of place-based understanding and locally relevant solution-building among Gulf Coast youth. The presentation will also highlight lessons learned from the S3 Camp's first phase, including strategies for managing diverse school schedules, integrating culturally grounded coastal phenomena into instruction, and building community partnerships to enhance authentic field experiences. The session will conclude with implications for scaling the project and outline the next steps for the longitudinal study. Together, this work demonstrates the promise of youth-generated environmental data in strengthening coastal resilience education and showcasing the value of learning in nature across the Gulf region.	203B	4:30 PM	4:45 PM
Model co-production to Support Assessments of Multiple Stressors on Houston Area Bottlenose Dolphins– Year 2	Michel Gielazyn	Federal and State trustees evaluate impacts from releases of hazardous substances and/or oil into the environment to evaluate potential natural resource damage assessments (NRDAs). Addressing data gaps about exposures to multiple contaminants and incorporating that knowledge into new and existing conceptual model(s) will benefit the NRDA decision-making process. Bottlenose dolphins (Tursiops truncatus) in the Houston area/Galveston Bay are exposed to dioxins, polychlorinated biphenyls (PCBs), and other contaminants and are the focus of this RESTORE project. This 5-year project will: 1) Analyze blubber samples from new and archived samples to determine the concentrations of PCBs and dioxins; 2) Conduct bi-annual photo-ID surveys of bottlenose dolphins and use spatial capture-recapture to determine survival rates in Galveston Bay and compare those to other southeast US populations; 3) analyze remote biopsy skin samples for epigenetic markers to gain an understanding of age and health of sampled dolphins; 4) use lab exposures of cell lines to determine dose-response relations of PCBs, dioxins, and relevant mixtures of PCBs and dioxins. This talk will provide updates on progress to date: field work, including completed photo-ID and remote biopsy sampling; stakeholder engagement, both completed and planned; chemical analyses; and plans for the cell line study and epigenetic work. We are eager to receive feedback on this project from GulfCon attendees. The final results of the project will be co-produced statistical models, conceptual models, and analyses that will be used Galveston Bay but will also useful for other locations. At the conclusion of the project, decision makers will have these models, methods, and information to design more targeted studies for specific cases and assessments.	204A	4:30 PM	4:45 PM

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Title	Speaker	Description	Location	Starts	Ends
Tracking Geomorphologic Change in Louisiana's Most Remote Barrier Island Chain, The Chandeleur Islands	Jennifer Miselis	Part of Breton National Wildlife Refuge, the Chandeleur Islands are a barrier island arc located ~120 km east of New Orleans, LA and ~50 km south of Biloxi, MS. The islands help regulate the salinity in Chandeleur Sound by balancing freshwater discharged from the Mississippi River with saltwater from the Gulf of America and provide habitat for threatened and endangered terrestrial and aquatic species. Maintaining these critical ecological functions and the economic activities they support has been challenged by the degradation of the barrier island chain due to relative sea level rise, decreasing natural sediment supply, and tropical cyclones, making restoring this coastal system a priority for the state of Louisiana. The U.S. Geological Survey has been measuring island elevations and extent for almost 20 years to understand how the Chandeleur Islands are changing, how quickly, and the natural and human processes driving these changes. The observations capture the state of the islands after Hurricane Katrina, the impacts of the construction and evolution of the oil spill-mitigation sand berm, and the effects of several tropical cyclones since 2011. Integrating satellite and lidar remote sensing with boat-based geophysics, we quantify spatial and temporal changes on the islands and in surrounding submerged areas from 2006 to 2023. During this time, the islands have experienced several cycles of degradation and rebuilding driven by tropical cyclones and sediment supply. Observations show that the addition of sediment from the constructed sand berm likely facilitated post-Katrina island re-emergence at the northern end of the island chain. The observations also show that tropical cyclones passing close to the islands drive sediments into the submerged portion of the system, whereas distant tropical systems and quiescent periods result in increased alongshore sediment transport to shallow water areas supporting island re-emergence. In the submerged portion of the system, we find that the gulf-side shoreface is eroding, suggesting that island re-emergence and sound-side increases in elevation are driven by both natural and human-mediated processes. Further, annual variations in accumulation around a 2010 borrow site at the northern portion of the study area reflect the variable influence of tropical cyclones and emplaced sediment availability. Altogether, these observations can shape our expectations of how the Chandeleurs may respond to future tropical cyclones and planned coastal restoration activities.	201B	4:30 PM	4:45 PM

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Title	Speaker	Description	Location	Starts	Ends
Integrating Autonomous Aerial and Surface Platforms for Oyster Reef Deployment and Coastal Habitat Assessment	Brandon Rau	Coastal ecosystems such as seagrass meadows and oyster reefs play a critical role in maintaining water quality, supporting biodiversity, and sequestering carbon. However, restoring and monitoring these habitats has traditionally been labor-intensive, costly, and limited in spatial and temporal coverage. AquaTech Eco Consultants is advancing restoration efficiency through the integration of autonomous air and surface systems that enable high-resolution data collection and targeted restoration at scale. AquaTech's drone program plays a central role in oyster reef restoration, utilizing unmanned aerial systems (UAS) not only for environmental monitoring but also for direct restoration activities. Our drones are equipped to deploy both oyster seed and eyed larvae across restoration sites with precision and efficiency, allowing for uniform distribution and rapid coverage of intertidal and shallow subtidal zones that are often difficult to access by boat. Simultaneously, our drone-mounted multispectral camera captures high-resolution imagery to assess site conditions, substrate stability, and surrounding vegetation health, including seagrass density and chlorophyll content. This aerial system supports both the establishment and ongoing assessment of restored habitats. In conjunction with these aerial operations, AquaTech has integrated BlueRobotics' BlueBoat platform, a modular and fully autonomous surface vessel, into its monitoring workflow. The BlueBoat enables precise, repeatable mapping of coastal and estuarine environments, collecting data on bottom composition, vegetation coverage, and reef structure with centimeter-level accuracy. Following initial oyster seed and larvae deployments, the BlueBoat is used to monitor reef growth, density, and habitat development over time, providing valuable post-restoration metrics that complement aerial observations. Together, these autonomous technologies provide a powerful dual-perspective approach. Having aerial deployment and monitoring combined with high-precision surface mapping allows the AquaTech staff to evaluate restoration success with unprecedented accuracy and efficiency. This presentation will highlight the integrated system's design, deployment methods, data analysis workflow, and results from ongoing pilot studies, demonstrating how autonomous marine platforms are reshaping the future of coastal restoration and environmental monitoring.	201C	4:30 PM	4:45 PM

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Title	Speaker	Description	Location	Starts	Ends
Measuring What Matters: The ISOL-S³ Toolkit for Place-Based STEM in the Gulf	Sandra Moss	As the Gulf Coast faces increasingly "wicked problems" from coastal erosion to ecosystem preservation, educators are turning to place-based, integrated STEM to prepare future problem solvers. However, while these programs effectively immerse students in nature, traditional assessments often fail to capture the holistic growth that occurs in "messy," authentic learning environments. To prove the value of learning in nature, we need data collection tools that look beyond basic content knowledge. This presentation introduces ISOL-S³ (Integrated STEM Outcomes & Learning), a flexible measurement toolkit designed to assess three critical dimensions of student growth: S¹ (STEM Skills), S² (Systems Thinking), and S³ (Sustainability). Participants will explore how ISOL-S³ operationalizes data collection for place-based programs through adaptable instruments. We will examine: The "Bayou Breeze" Performance Task: A scenario-based assessment specifically modeled for the Gulf Coast, where students address local issues like king-tide flooding and oyster bed preservation. This tool measures how students identify stakeholders, analyze trade-offs, and spot unintended consequences in a local system. Process-Based Rubrics: How to use ISOL-S³ Engineering Design Cycle Rubric (EDC Rubric) to evaluate student artifacts and behaviors, moving from "Emerging" to "Thriving" in sustainability impact and design thinking. Rapid Formative Assessment: The use of the "Is it a System?" visual check (Purpose, Parts, Connections) to capture daily growth in systems reasoning during fieldwork. ISOL-S³ offers a rigorous yet accessible framework for synthesizing data on student self-efficacy, systems reasoning, and United Nations Sustainable Development Goal alignment. By adopting these metrics, Gulf Coast educators can quantitatively and qualitatively demonstrate how place-based education cultivates a generation who cares. The ISOL-S³ framework provides a fast, fair, and SDG-aligned way to show student growth in STEM skills, systems thinking, and sustainability, moving beyond anecdotal evidence.	203B	4:45 PM	5:00 PM
Tony Trapani Reef: A Vertical Relief Approach to Enhancing Oyster Reef Resilience	Sierra Ortiz	Eastern oysters (Crassostrea virginica) are a sessile organism that needs a hard substrate for survival. This species of oyster form beds of shells that act as a habitat for many fish, crabs, and other marine species. Eastern oysters are filter feeders which can filter the excess nutrients and pollutants, improving the water quality of a given area. Historically, Mississippi used to be a leading “Seafood Capitol of the World” due to the massive oyster and shrimp industry. In recent decades, however, oyster populations in the Gulf have declined due to a variety of anthropogenic and natural stressors. Strategic placement of a cultch substrate (limestone, oyster shells) can be designed to add resilience and increase surface area to maximize benefits for oysters and habitat. The Tony Trapani Reef is a 40.3 acre near shore reef in St. Louis Bay, Mississippi. The reef was constructed using limestone and recycled oyster shells consisting of over 17,000 pods of material precisely placed four feet apart from each other adding vertical relief for the oyster population. The Nature Conservancy has been monitoring the reef, checking water quality (temperature, salinity, dissolved oxygen, turbidity) and the density (size, stage of growth). We anticipate this reef with its complex design to promote a better survival rate for oyster populations and create a more dynamic ecosystem for many marine species to have habitat, a food source, and protection from predation. In this presentation, I will be discussing the process of implementing a project at this scale and the data collected from the oyster population found.	201C	4:45 PM	5:00 PM

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Title	Speaker	Description	Location	Starts	Ends
Research priorities for management and conservation of the endangered Rice's whale: From a workshop to the creation of a research network	Frank Parker	The Rice's whale (Balaenoptera ricei), the most recently described great whale species (2019), is endemic to the Gulf and among the most endangered cetaceans in the world (likely <100 individuals remain). Current knowledge suggests that the highest density of Rice's whales occurs in the northeastern Gulf, although recent information confirms their presence in the western and southern Gulf. They are subject to a variety of threats, including vessel strikes, noise from vessels and energy activities, ingestion of marine debris, entanglement in fishing gear, and exposure to oil and other pollutants. Comprehensive modeling after the 2010 Deepwater Horizon oil spill indicates the species experienced severe increases in mortality, failed pregnancies, and adverse health effects. A workshop that brought together 47 experts to identify research gaps and priorities relevant to Rice's whale management and conservation was held in October 2024 in Miami, FL. The workshop had two main goals: (1) identify, organize, and prioritize research to address key management and conservation needs for Rice's whales; and (2) create the foundation for a collaborative research network and advance co-produced science and information exchange, outreach and educational activities, and resource and data sharing. This presentation will provide an overview of the workshop, which used a modified "World Café" technique for expert elicitation. Participants developed prioritized lists of research needs, assessing their potential impact and feasibility, under four broad themes: (1) distribution, abundance, and population dynamics; (2) habitat use, movements, and trophic interactions; (3) population genetics, evolutionary history, physiology, and health; and (4) threats and mitigation of human impacts. The goals and structure for building a Rice's Whale Collaborative Research Network were also discussed. Workshop proceedings, key outcomes, and recommendations will be published in a scientific journal.	204A	4:45 PM	5:00 PM

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Title	Speaker	Description	Location	Starts	Ends
Simultaneous and colocated measurements of wind turbulence and sea spray aerosol concentration in coastal region with scanning Doppler LiDARs	Giacomo Valerio Iungo	A plume originating from an oil spill rises following complex dynamics, which are affected by the multi-phase plume composition, ocean currents and turbulence, and ultimately reaches the ocean surface, generating aerosol. Plume gases are released in the atmosphere through bubble bursting, while oil droplets are aerosolized due to various mechanisms occurring at the sea-air interface that are affected by multiple parameters, such as wind stress, wind turbulence, and wave dynamics. Once suspended in the atmosphere, aerosolized oil droplets are entrained within turbulent eddies and transported by the marine atmospheric boundary layer (MABL). The aerosol residence time varies from days down to a fraction of a second, depending on the size and composition of the aerosol particles, velocity and turbulence in the MABL. Furthermore, when advected by wind, oil aerosol behaves in a more complicated fashion than passive scalars, which is a consequence of its non-negligible inertia and settling motion. The prediction of production, transport, and deposition of aerosolized oil droplets for different wind and ocean conditions is still a great challenge due to the complex multiscale and multiphase nature resulting from the interaction between the MABL wind field and sea-surface waves. In this work, turbulent transport of sea spray aerosols is investigated through simultaneous and co-located measurements of wind speed, turbulence intensity, and marine aerosol concentration collected with a scanning Doppler LiDAR in the MABL at a coastal region. The horizontal streamwise velocity is probed by pointing the LiDAR laser beam in the mean wind direction, while the variability in turbulence intensity and marine aerosol concentration is probed through the spectral width and backscatter coefficient of the LiDAR signal, respectively. These measurements of wind turbulence and marine aerosol concentration can be instrumental for developing improved aerosol source functions for MABL simulations. Accurate measurements of production, transport and deposition of aerosol from the ocean surface to a coastal region can be advantageously leveraged to investigate transport of pollutants, their deposition and settling over a coastal area. These measurements can inform aerosol prediction models for a broad range of scientific and technological pursuits, such as planning effective projects for environmental restoration. It would be possible to unveil under which atmospheric and wave conditions high pollutant concentrations will be observed, and which areas will mainly be affected. The development of these numerical tools will be highly valuable to estimate the environmental impact of sea-generated pollutants on the air quality, which is essential information for medical research projects investigating respiratory diseases, such as asthma, for which enhanced morbidity has been observed in the Gulf area.	201B	4:45 PM	5:00 PM

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Title	Speakers	Description	Location	Starts	Ends
Introductions: Microplastics and Beyond: Integrating Science, Technology, and Community Action for a Sustainable Gulf Coast	Shenghua Wu	Intorduction to the session and KeynoteSpeakers:Shenghua Wu, Associate Professor, Department of Civil, Coastal, and Environmental Engineering, University of South AlabamaJacquelyn Grace, Assistant Professor, Dept. of Ecology & Conservation Biology, Texas A&M UnivsityTerri Maness, Environmental Science Program Coordinator, School of Biological Sciences, Louisiana Tech University Micro and nanoplastics (collectively referred to as microplastics) are an emerging global challenge that threatens the health, resilience, and sustainability of coastal ecosystems. Nowhere is this issue more pressing than in the Gulf Coast, a region defined by its rich biodiversity, vital fisheries, dense coastal populations, and the nation's highest concentration of plastic manufacturing facilities. Despite growing awareness, our understanding of the scope, severity, and long-term impacts of microplastic pollution remains limited due to its inherently transdisciplinary nature. This session provides a platform for dialogue and collaboration among ecologists, engineers, chemists, physicists, oceanographers, social scientists, environmental educators, community collaborators, and policymakers. We invite presentations that examine the sources, concentrations, and ecological or human health effects of microplastics across marine, estuarine, and terrestrial systems in the Gulf region. Topics may include innovative technologies for mitigation and removal, such as cost-effective treatment systems, recycling and repurposing techniques, and the use of artificial intelligence for real-time monitoring and hotspot identification. Emphasizing environmental stewardship, this session also encourages contributions that explore the integration of science and management to inform decision-making and community action. By bridging disciplines and sectors, including academia, industry, and government, we aim to advance understanding of the Gulf's unique vulnerabilities and accelerate the development of practical, scalable solutions for reducing microplastic pollution. Through shared knowledge and collective effort, this symposium seeks to chart a path toward a cleaner, more resilient, and sustainable Gulf Coast	201A	9:00 AM	9:30 AM
A Living Shoreline Design Approach: Supporting the Pointe-au-Chien Indian Tribe's Climate Adaptation Efforts	Matthew Bethel	The Pointe-au-Chien Indian Tribe (PACIT), located in Southeastern Louisiana, thrives on diverse ecological and cultural resources, such as birds, plants, animals, fish, and sacred sites. Historically, Tribe members were fishers, hunters, and farmers. While many Tribe members continue to fish as a livelihood, climate-related hazards threaten their continued existence in the region and ability to thrive. Adaptation measures taken by Tribe members have not been sufficient to withstand increased tropical storm impacts because of the loss of much of the surrounding lands to open water, exposing the community to greater storm surge and more frequent flooding. Following Hurricane Ida's devastating impacts in August 2021, the Tribe is developing a comprehensive community-based strategy to prepare for future storms. Living shorelines are a nature-based solution that can support the PACIT in achieving critical aspects of their vision to sustainably rebuild and adapt to increasingly severe climate-related hazards. Through the support of the NASEM's Gulf Research Program, a transdisciplinary team led by Louisiana Sea Grant created a design for a network of living shoreline structures utilizing a version of a Living Shorelines Site Suitability Model made relevant to the local area through co-production-based research. This concept is a key strategy for protecting the community from future storm impacts and flooding that honors the Tribe's cultural heritage and priorities. We expect this process will inform the design of similar measures in other coastal communities most at risk.	201C	9:00 AM	9:15 AM

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Title	Speakers	Description	Location	Starts	Ends
A Co-Production Project to Incorporate Fisheries Genomic Tools into Next-generation Stock Assessment - Part I: Epigenetic Ageing	David Portnoy	Recent studies have demonstrated that DNA methylation levels at certain CpG sites (cytosines followed by guanines) exhibit strong correlations with chronological age, allowing for the development of DNA methylation-based, age-predictive models referred to as epigenetic clocks. This technique is potentially transformative for fisheries science, because age data are a critical input to stock assessments but obtaining age data by traditional techniques (e.g., otolith analysis) can be time consuming and often does not include important components of the fishery (e.g., live discards). We have developed an approach by which we produce consensus age estimates derived from ageing structures (e.g., otoliths, spines, vertebrae) and validated via eye lens core D14C, and then utilize those age estimates and genomic data to produce species-specific epigenetic clocks. Pairing epigenetic ageing with age validation techniques permits the development of epigenetic clocks with high accuracy and precision, and allows for the development of economically efficient DNA sequencing panels suitable for mass ageing. Furthermore, epigenetic ageing can be accomplished non-lethally using small tissue samples (e.g., fin clips, muscle biopsies), allowing characterization of age composition of landings and regulatory discards. This talk will describe the processes of age validation and epigenetic clock development, highlighting the results of recent studies on a suite of fishes of commercial or recreational importance in the Gulf and beyond.	202B	9:00 AM	9:15 AM
Using coastal flood risk & rising seas web tools plus site-specific flood visuals & FFE data to earn CRS credit	Dan Rizza	This presentation demonstrates ISO-confirmed methods for CRS implementers to use Climate Central's public coastal-flood/rising-seas web tools, as well as FloodVision's photorealistic visuals and finished-floor elevation data to earn CRS credit. Climate Central's public web tools can support CRS credit across multiple elements. Communities can use them to document Map Information Service needs under Activity 322c and to underpin Outreach Projects under Activity 330 with locally relevant maps and web content. They can also help with Hazard Disclosure (342d), expand Flood Protection Website content for Activity 352c (WEB), and provide future-conditions context relevant to Higher Study Standards (412d HSS), Coastal Erosion Open Space (422e CEOS), Protection of Critical Facilities (432f PCF), Coastal A Zones (432k CAZ), and Watershed Master Planning (452b WMP). Communities can draw on localized content to support Floodplain Management Planning (512a FMP), and the same materials can be incorporated into Flood Warning and Response (610) briefings and public-facing documentation. Where communities address rising seas specifically, our datasets can also inform Section 404 considerations in alignment with local standards and Specialist guidance. And where appropriate, communities can use FloodVision's photorealistic visuals and FFE elevation data to identify and communicate high-risk structures for voluntary buyouts under Activity 520 (Acquisition & Relocation); to document pre- and post-elevation conditions supporting Activity 530 (Flood Protection); and to enhance public briefings and engagement tallies associated with Activity 610 (Flood Warning & Response), as well as within activities, 320, 330, and 440. Attendees will leave knowing how to use materials from our tools to strengthen CRS documentation, engagement, and resilience outcomes — and how officials are using these resources in vulnerability assessments, outreach, grant workflows, and more.	201D	9:00 AM	9:15 AM

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Title	Speakers	Description	Location	Starts	Ends
Public Art in the Watershed	Karla Klay	Artist Boat has worked with many school districts in the Galveston/Houston area to implement a robust educational out of school time program where students were introduced to the Galveston Bay watershed and the interconnected impacts that humans have on this planet through Science and Art and created lasting public art to translate their knowledge to others. At these campuses, students created “visual learning legacies” in the form of a 8’x4’ large-scale acrylic murals. The murals tell the story of Galveston Bay from their neighborhood - how it is fed by the Trinity and San Jacinto Rivers, how the land is utilized, and how that water eventually flows into the Gulf. The murals showcase the unique organisms that thrive in the fresh water wetlands, oak motte, coastal prairie, salt water wetlands, dune and beach environments from all across the Texas coastline. Each school is uniquely depicted on the murals – surrounded by local human infrastructure such as roads, neighborhoods, refineries, and the city of Houston. Throughout the planning, designing, and implementation process of creating these murals, the students were able to visually see the connection between their homes, and how deeply interconnected humans are with the fragile and resilient ecosystems that surround them. During our time with students in summer or after school, students were provided a succinct lesson, art project, and discussion of tangible action steps the students can take to work through environmental challenges. Students engaged in a variety of hands-on lessons to learn about the watershed, create art, and meet natural resource organizations working to improve the quality of Galveston Bay. The collaboration between these schools and grant partners will serve as inspiration for future Galveston Bay stewards for many years to come.	203B	9:00 AM	9:15 AM
Texas’ Multifaceted Approach to Sea Turtle Restoration	Kimberly Biba	The Deepwater Horizon oil spill released approximately 134 million gallons of oil into the Gulf, severely impacting marine life, including an estimated 94,900 to 202,600 sea turtle deaths. As part of the Deepwater Horizon Natural Resource Damage Assessment Settlement, over $27 million dollars were allocated for Texas to restore sea turtles. Texas took a multifaceted approach to restoring multiple species of sea turtles at different life stages. Activities include detecting and protecting nests, reducing sea turtle bycatch by enforcing existing regulations, reducing marine debris impacts on sea turtles, enhancing the sea turtle stranding and salvage network, rehabilitating injured and cold stunned sea turtles, and constructing a new rehabilitation facility. This presentation will provide an in-depth overview of Texas' efforts to restore imperiled sea turtles by showcasing the remarkable contributions of the project partners and highlighting lessons learned along the way.	204A	9:00 AM	9:15 AM

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Title	Speakers	Description	Location	Starts	Ends
Dauphin Island Causeway Shoreline Restoration Project: Beneficial Use of Navigation Dredged Material for Habitat Restoration and Shoreline Protection	Kevin Hanegan	The Dauphin Island Causeway Shoreline Restoration Project is restoring 80 acres of salt marsh habitat along 3.5 miles of shoreline in Mobile Bay. The purposes of the project are to restore eroded marsh habitat and provide resilience to the Causeway, the sole evacuation corridor from Dauphin Island to mainland Mobile County that is frequently overtopped during storm events. The project is funded by NFWF's Gulf Environmental Benefit Fund (GEBF) and Emergency Coastal Resilience Fund (ECRF), and is one of the largest and most significant investments in an Alabama coastal restoration project to date. The project is being constructed in three contract phases. The Phase 1 contract was administered by Mobile County to construct segmented low-crested breakwaters to protect the restored habitat and roadway and provide containment during the marsh fill construction activities. In Phase 2, over one million cubic yards of material dredged from the Mobile Harbor Deepening Project was beneficially used to restore habitat through an agreement between the County and the USACE Mobile District. The sandy material was used to construct a sand berm along the landward side of the breakwaters, providing additional containment and forming high marsh and beach ridge habitat. The material with higher fines content was placed landward of the sand berm as marsh fill. Finally, the County will administer the Phase 3 contract to install vegetative plantings, excavate tidal creeks, and perform other habitat enhancements, which may include additional BU placement to increase habitat sustainability. This project's success was highly dependent upon the close coordination of Mobile County, ADCNR, USACE Mobile District, and Mobile County's consultants. This presentation will discuss the coordination efforts that were made to bring this project to fruition, key design features that enabled efficient beneficial use, permitting constraints, construction challenges, and lessons learned for successful BUDM.	203A	9:00 AM	9:15 AM
Strengthening CRS Implementation Through CRS Users Groups	Monica Farris	The Community Rating System (CRS) is a voluntary program available to National Flood Insurance Program (NFIP) participating communities. The CRS provides incentives for communities to implement flood risk reduction activities that extend beyond the minimum floodplain management regulations established by the NFIP to minimize risk. CRS activities include education and outreach, the enforcement of higher regulatory standards, flood risk mapping, planning, etc. As we experience increases in intense rainfall events, increases in significant flood events, and the rise in flood insurance rates resulting from FEMA's new NFIP rating methodology, the CRS is vital to community disaster resilience. Not only does the CRS encourage risk reduction activities, but it also provides discounts on NFIP insurance policies for residents of CRS communities. In coordination with the LaDOTD Floodplain Management Office, UNO-CHART supports local implementation of the CRS through its facilitation of CRS Users Groups. Upon request by local floodplain management officials in 2012, UNO-CHART began facilitating CRS Users Groups in South Louisiana. CRS Users Groups are made up of local officials such as floodplain managers, building officials, planners, etc. and they serve as support and as an educational resource for local communities. UNO-CHART facilitates monthly meetings of two users groups in Louisiana: one in the Lake Pontchartrain area, known as FLOAT, and one in the Baton Rouge area, known as CRAFT. As part of this effort, CHART led the development of multijurisdictional projects such as Multijurisdictional Programs for Public Information (PPI) for FLOAT and CRAFT. Overall, CRS Users Groups demonstrate a collaborative effort to reduce flood risk and lower insurance costs for communities.	201D	9:15 AM	9:30 AM

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Title	Speakers	Description	Location	Starts	Ends
PPBEP's Living Shoreline Assistance Program	Paige Lansky	Shoreline hardening has substantially impacted the ecological health of the Pensacola and Perdido Bay Watersheds, with hardened structures now lining approximately 55% of Pensacola Bay and 27% of Perdido Bay shorelines. To address this issue, the Pensacola and Perdido Bays Estuary Program (PPBEP) launched the Living Shoreline Assistance Program to encourage and support private landowners to adopt nature-based solutions as alternatives to traditional hardened shorelines, such as seawalls and bulkheads. The program provides technical support, permitting assistance, and financial assistance for waterfront property owners interested in installing a living shoreline. This initiative aims to reduce shoreline erosion, enhance habitat quality, and promote sustainable shoreline management practices across the region. Launched in January 2025, the program has quickly captured the attention of waterfront residents across the region and is already offering valuable insights into shaping cost-share programs, navigating permitting challenges, and strengthening community engagement.	201C	9:15 AM	9:30 AM
A Co-Production Project to Incorporate Fisheries Genomic Tools into Next-generation Stock Assessment - Part II : Sampling Design and Stock Assessment	Lisa Ailloud	In the Gulf, the stock status determination process carried out through regular stock assessments depends heavily on age data that are used to track, understand and predict variability in important processes (i.e., growth, recruitment, mortality) that determine stock productivity and resilience. However, producing age composition data via ageing hard parts (e.g., otoliths, spines, vertebrae) on average takes nearly 2.5 years after samples are collected, which greatly hampers the timeliness of assessments. Furthermore, the age composition of regulatory discards is unknown under the current system, and age estimates of the landed catch for given species can suffer from bias or imprecision. Epigenetic ageing offers an approach to produce accurate and precise age estimates more efficiently, and in a nonlethal manner. Our study aims to operationalize the collection of minimally invasive tissue samples (e.g., fin clips, muscle biopsies) across the Gulf, with higher sample sizes and greater resolution than is currently possible through the collection of hard parts, to improve the efficiency and accuracy of the assessment process via epigenetic ageing. To that end, we are developing a collaborative framework among federal, regional, and state collaborators, including industry stakeholders, to collect and archive fin clip tissue samples. Once age composition estimates are produced, statistical analyses will be conducted to demonstrate the improvement of assessments that use time series of epigenetic-derived age data instead of hard part-derived for three species (red snapper, gray triggerfish and gag grouper), while providing time series of biological data that can be input directly into assessments. The genomics and analytical tools, as well as the framework for data collection, developed in this study will be transformative for the assessment process, enhancing the timeliness and certainty in catch advice coming from next-generation assessments, which in turn will lead to more efficient and sustainable Gulf fisheries.	202B	9:15 AM	9:30 AM
Art for Nature's Sake	Katy Simmons-Carroll	WAMA Educators share their investigation into the value of using art to explore environmental science concepts, highlight challenges, and encourage agency among middle school students on the MS Gulf Coast.	203B	9:15 AM	9:30 AM

Title	Speakers	Description	Location	Starts	Ends
Juvenile sea turtle dispersal and recruitment in the Gulf	Katrina Phillips	Sea turtles in the early life stage known as the 'lost years' remain the most difficult to observe and study, particularly among species with broad dispersal after hatching. The goals of this research were to 1) track early juvenile sea turtle movements in the Gulf; 2) compare turtle movements to passive oceanographic drifters for evidence of swimming behavior; and 3) examine potential neritic recruitment events to better describe where and when transitions between oceanic and neritic habitat use occurs. Between 2011 and 2022, we sampled, tagged, and released 114 'lost years' turtles across four species: green turtles (Chelonia mydas; n=79), Kemp's ridleys (Lepidochelys kempii; n=26), loggerheads (Caretta caretta; n=5), and hawksbills (Eretmochelys imbricata; n=4). Turtles ranged in size from 12.3-29.9 cm straight carapace length. To track post-release movements, we affixed solar-powered Argos PTTs to wild-caught turtles. We deployed a pair of oceanographic drifters at each turtle release to evaluate active versus passive movements. The average turtle tracking duration was 37 days (SD 21.9). Behavioral states differed between turtles and drifters, as did the frequency of positions in water depths <200 m, indicating the importance of behavior on their net movement and habitat associations. Nine turtles traveled via the Gulf Stream around the southern tip of Florida to the North Atlantic. Few if any turtles recruited to neritic habitats within the tracking period and many appeared to orient away from the coast. Turtles did not approach shore as closely or strand onshore as drifters did. Our results show that the waters over the continental shelf are important for small juvenile sea turtles in the Gulf. These data represent the most comprehensive tracking data for wild-caught dispersal-stage juveniles to date, offering a glimpse into the 'lost years' which will improve conservation and management plans to ensure their persistence in the future.	204A	9:15 AM	9:30 AM
Round Island Beneficial Use and Habitat Restoration: History, Progress, and Future Outlook	Heath Hansell	The existing Round Island complex in the Mississippi Sound is comprised of the natural Round Island landform and New Round Island, an adjacent beneficial use site originally constructed in 2016. Historic land loss at Round Island, Mississippi's burgeoning beneficial use program, and state-wide marsh habitat erosion, led to the inception of the New Round Island landmark project – the simultaneous restoration of a disappearing island and large-scale beneficial use site for marsh habitat creation. Since New Round's original construction, beneficial use projects have placed dredged material at the site, creating and expanding marsh habitat within the created sandy island berm. Ongoing monitoring continues to support adaptive management operations and long-term planning. Background erosion and significant storm activity have prompted restoration and protection activities for both New Round and Round Islands. The proposed Round Island Expansion project plans to restore, expand, and protect the coastal island habitats and the beneficial use site at the Round Island complex. The project will result in over 250 acres of coastal island habitat creation and protection of the beneficial uses site for continued operations and marsh creation. Proposed habitats include beach and dune systems, maritime forests, and interior swale pond. This presentation will provide an overview of the New Round Island beneficial use site for marsh creation and ongoing material placement for habitat creation, discuss monitoring and adaptive management activities, and present the ongoing Round Island Expansion project.	203A	9:15 AM	9:30 AM

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Title	Speakers	Description	Location	Starts	Ends
Enhanced Fish Tracker Algorithm via processed Image Frames	Iffat Ara Ebu	Tracking underwater fish species is essential for population monitoring, stock assessment, ecological research, and the protection of endangered species. Although image processing and computer vision techniques have advanced fish detection and classification, multi-object tracking in natural underwater environments remains significantly more challenging and relatively underexplored. This work utilizes the Gulf Fishery-Independent Survey of Habitat and Ecosystem Resources Dataset 2024 (GFISHERD24) dataset, collected from the Gulf of America in 2024, which contains frame-annotated videos of fish in their natural habitats. The dataset presents substantial real-world challenges, including occlusions caused by other fish or vertical cage structures, multiple fish per frame, low-light conditions, and variable visibility. To overcome these challenges, we employ YOLOX, an anchor-free, high-performance object detector, and adapt the ByteTrack algorithm for robust multi-object tracking. Unlike traditional trackers, ByteTrack retains both high and low confidence detections, allowing more accurate association of partially occluded or low-visibility fish. The GFISHERD24 dataset was converted to MS COCO format for detection training and to MOT17 format for tracking evaluation. On the test set, the adapted ByteTrack achieved a good performance; however, a major challenge in our dataset arises from fish moving behind vertical cage bars, causing significant visual obstruction. These occlusions often break a fish's existing track and result in new track IDs, ultimately distorting fish counts. To mitigate this, we removed the vertical-bar obstructions from image frames and retrained and tested the models using the refined dataset. This preprocessing noticeably increased MOTA and reduced ID switches. In conclusion, with improved image frame preprocessing to handle structural occlusions, the adapted ByteTrack framework demonstrates strong effectiveness for large-scale underwater fish tracking in challenging, real-world environments.	202B	9:30 AM	9:45 AM
Friendship bracelets for exploring local sea level rise data	Ali Rellinger	Sea Level Rise represents an important climate hazard to many coastal locations driving the need for increased literacy and awareness on this topic. Through an education program funded through the NASA Science Activation Program, our team has sought to create activities to increase understanding and access to local historical sea level rise data and future local sea level rise projections. Additionally, these activities draw upon social science research into attitudes on climate change, as well as human perceptions of time and measurements in their design to create educational products that increase sea level rise literacy as well as tackle common issues on perceptions of climate hazards. We will highlight the Sea Level Rise Friendship bracelet activity as an example of an educational activity that connects users to data presented in the interagency National Sea Level Explorer and explore how it was designed to increase understanding of local sea level rise science across the Gulf. This will include how the activity has been intergrated with other locally-focused, solutions-oriented educational activities to foster climate resilience education in a variety of formal and informal settings. We will also provide an overview of participant evaluation results of this activity as well as future training opportunities for participants interested in utilizing these educational materials in their programs.	203B	9:30 AM	9:45 AM

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Title	Speakers	Description	Location	Starts	Ends
Beyond Green vs. Gray: Integrating Housing Resilience into Holistic Coastal Protection Strategies	Brooke Troxmondo	Coastal resilience planning has traditionally treated built infrastructure and nature-based solutions as separate—even competing—strategies, creating silos that undermine comprehensive community protection. This presentation challenges this false dichotomy by demonstrating that resilient housing is not merely a beneficiary of coastal protection but a critical component of integrated coastal resilience that must work in concert with natural systems. Drawing on recent studies and data from Gulf Coast pilot communities, we present evidence that resilient construction methods deliver substantial economic returns, including measurable reductions in storm damage and long-term cost savings. However, these benefits are maximized only when housing resilience is strategically integrated with natural systems management—when dunes, marshes, and resilient buildings function as complementary layers of protection rather than isolated interventions. When communities recognize that strengthening housing stock is as fundamental to coastal protection as restoring wetlands, it catalyzes more holistic planning that considers land use, building standards, natural habitat protection, and community equity as interconnected elements. Case studies from Gulf Coast cities, counties, and parishes demonstrate how integrated approaches—supported by tools like the Resilient Housing Planning Guide & Workbook—facilitate cross-sector collaboration between emergency managers, natural resource planners, housing authorities, and community organizations. We identify key barriers preventing this integration, including fragmented funding streams, disciplinary silos in planning processes, and policy frameworks that inadvertently pit built and natural solutions against each other. The presentation concludes with recommendations for restructuring coastal resilience planning to treat housing and natural systems as two essential components of the same protective strategy, ultimately building communities that are more equitable, economically sustainable, and genuinely resilient to tomorrow's hazards.	201C	9:30 AM	9:45 AM
Communicating CRS and Flood Risk Through Agentic AI: A New Paradigm of Community Engagement and Decision Support	Adilur Rahim	Gulf Coast communities face persistent challenges in understanding flood risk and navigating FEMA's Community Rating System (CRS), particularly when staff capacity is limited and scientific information is difficult to translate into everyday decisions. These barriers limit effective community engagement and slow progress toward flood-safe, resilient communities. To address these communication challenges, we developed an agentic AI-driven CRS Communication Dashboard that integrates flood hazard data, NFIP Risk Rating 2.0 insights, community socioeconomic indicators, and local mitigation information into an interactive, easy-to-use environment for Gulf Coast communities. The dashboard introduces a new paradigm for science communication and community engagement. An autonomous AI assistant helps users interpret technical terms, generates plain-language explanations of CRS activities, prepares localized community briefs, supports conversations with residents, elected officials, and planning staff, and highlights how CRS activities strengthen community resilience. Through digital-twin visualization, interactive flood-scenario exploration, and localized community briefs, the system bridges the gap between complex hazard science and practical resilience action and helps communities clearly see the connection between flood risk, mitigation actions, and potential insurance benefits. Co-developed with Louisiana stakeholders through an extension and outreach framework, this approach enhances community engagement around CRS, improves communication of flood insurance and mitigation benefits, and supports the development of more flood-safe, resilient Gulf Coast communities. It offers a scalable model for strengthening engagement, building local capacity, and promoting resilience across the Gulf Coast region.	201D	9:30 AM	9:45 AM

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Title	Speakers	Description	Location	Starts	Ends
Widespread Microplastic Ingestion by Waterfowl in the Northern Gulf	Jacquelyn Grace	Some of the highest concentrations of microplastics, globally, have been reported in the Gulf of America, which is home to most plastic manufacturers in the United States. Microplastic ingestion not only poses a physical threat to humans and wildlife, but also an ecotoxicological threat from chemicals associated with plastic production and those readily adsorbed from the environment onto the plastic particles. A comprehensive understanding of the risk microplastic contamination poses to wildlife is critical to the development of scientifically sound mitigation and policy initiatives. However, very little knowledge exists regarding patterns of microplastic ingestion in Gulf of America birds or waterfowl in general, and specifically, no knowledge in Gulf of America waterfowl prior to this study. Here, we assess microplastic quantities and probability of ingestion for hunter-donated waterfowl from Texas and Louisiana. We collected carcasses of dabbling and diving ducks from hunters, dissected out the intestinal tracts, digested organics, filtered out microplastics, and counted them under a dissecting microscope. The probability of ingestion for wintering ducks from both states was approximately 60% with microplastic quantities ranging from zero to 80 microplastic pieces per individual. Microplastic fibers were overwhelmingly prevalent and 100% of ducks with detectable microplastic ingestion had ingested fibers. Fragments, films, foams, foils, and nurdles were also all detectable at much lower percentages. The most prevalent microplastic colors were blue (~90% of ducks), and black, clear, and green (~85%, each), followed by red (~60%), white (~50%), and brown, yellow, and gray (<30%, each). Overall, our results suggest widespread ingestion of microplastics, and especially microplastic fibers, by wintering waterfowl in the northern Gulf of America. Future research is needed to understand the implications of this contamination for waterfowl health, productivity, and potential trophic transfer to humans.	201A	9:30 AM	9:45 AM
Vessel Avoidance Behavior in Green Turtles off the Gulf Coast of Florida	Trenton Aguilar	Vessel strikes have become a concerning source of mortality for sea turtles due toincreased turtle and vessel abundance in shared areas. For effective management strategies to be established, this threat to sea turtles must be thoroughly understood. To aid in this effort, we observed how green turtles (Chelonia mydas) reacted to oncoming vessels at varying speeds. We conducted observational boat surveys to measure turtle flight responses and flight initiation distances (distance from the bow of the vessel an animal begins flight behavior) and then compared behaviors of turtles of differing size classes (greater or less than 60 cm estimated carapace length). We found that green turtles' average flight initiation distance was significantly driven by the speed of the oncoming vessel, with the average flight initiation distance reducing from a high of 7.7m in ideal conditions at 4 km to a high of only 5m in ideal conditions at higher speeds of 9 and 14 km . There was no correlation between flight initiation distance and the turtles' size. Green turtles show a preference of flight behavior, fleeing directly away from the trajectory of the oncoming vessel in 51% of interactions (n = 78). Green turtle populations are rebounding, and the number of recreational vessels is increasing in coastal waters, meaning alikely increase in vessel/turtle interactions. This research looks to improve the available information on a threat for sea turtles in coastal waters and will be useful for managementorganizations to help reduce vessel related mortality.	204A	9:30 AM	9:45 AM

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Title	Speakers	Description	Location	Starts	Ends
Five years of post-construction structural and biological monitoring at Lightning Point shed light on key lessons learned.	Mary Kate Brown	In 2019, The Nature Conservancy implemented a large-scale restoration project to protect the coastal community of Bayou La Batre, Alabama from future coastal hazards and to revitalize a locally important waterfront area that lost over 500 feet of shoreline in a century. Designed by coastal engineers of Moffatt & Nichol and guided by scientists from Dauphin Island Sea Lab, the Lightning Point Restoration project included 1.5 miles of segmented breakwaters; more than 40 acres of marsh and scrub-shrub habitats; 2 miles of excavated tidal creeks; and installation of almost 90,000 native plants. The site was tested immediately after completion in Summer 2020 against four major named storms with minimal damage and showcased immense resiliency. Project success stems from its thoughtful nature-based engineering design team and feedback from experts who helped develop a strategic 5-year Monitoring and Adaptive Management Plan to capture key structural and biological parameters. By measuring both structural and biological metrics annually and simultaneously post-construction, the team collated lessons to design future optimal nature-based solutions. Findings indicate successful integration of engineered and ecological components. The breakwaters maintained their integrity and expected settlement rates, while stabilizing the 43-acre coastal habitat expanse without significant sediment loss. The stability of the breakwaters has allowed native plants to flourish over the newly created portions of the sites and less non-native species are encountered across the protected marshes. The team will highlight critical green and gray components to be evaluated in monitoring plans for successful, sustainable and resilient nature-based solutions and share lessons learned for future implementation across the Gulf.	203A	9:30 AM	9:45 AM
Utilizing Fine-Grained Dredged Material for Marsh Restoration Implementation	Russ Joffrion	The goal of a resilient marsh restoration project is to create wetland habitat in degraded coastal marsh regions, in an effort to maximize the ecological benefits for the duration of the project's design life. Marsh restoration projects are nature-based solutions, which typically rely on nearshore, mixed sediment (sand, slit, and clay) borrow sources for the construction of the proposed marsh restoration project features. These projects are typically implemented by constructing a containment dike template, hydraulically dredging material from a proposed borrow area/navigation channel, providing a designated dredge pipeline corridor for material conveyance, and pumping the dredge slurry to the designated marsh restoration areas/beneficial use site. The coastal landscape of the Gulf Coast Region consists of bayous, canals, and shallow bays, along with coastal marsh and soft alluvium soils. This variable deltaic combination provides challenging soil conditions for marsh restoration implementation. The use of dredged, fine-grained (clay and slit) sediments for marsh restoration borrow is often viewed as unsuitable fill material due to inconsistent soil behavior during construction. However, marsh restoration projects have been successfully designed and constructed in the Gulf Coast Region using fine-grained sediments by incorporating current design standards of practice for geotechnical investigations and design. These engineering protocol are required to estimate both the short-term and the long-term behavior of the fine-grained dredged material, which can reduce uncertainty and risks for the project, thus providing an effective borrow material for marsh restoration projects in the Gulf Coast Region.	203A	9:45 AM	10:00 AM

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Title	Speakers	Description	Location	Starts	Ends
Tissue-Level Accumulation of Nano- and Microplastics in Clapper Rails from the Texas Gulf Coast	R. Keith Andringa	Nano- and microplastics are pervasive in Gulf ecosystems, yet standardized monitoring across coastal habitats remains limited. Saltmarsh birds, particularly the Clapper Rail (Rallus crepitans), offer strong potential as regional indicators because Gulf Coast populations are non-migratory, occupy small home ranges, and occur continuously in saltmarshes across the entire region. As a result, they are exposed to local inputs of plastic contamination through multiple environmental pathways. Despite extensive work quantifying plastics in avian gastrointestinal tracts, little is known about the accumulation of nano- and microplastics in internal tissues, where toxicological effects are most likely to occur. This study investigates the presence and composition of twelve major industrial plastic polymers in Clapper Rail tissues using pyrolysis tandem gas chromatography–mass spectrometry (pyrGC-MS), a sensitive analytical technique capable of detecting polymer residues following enzymatic digestion. Rails were collected from two Texas bay systems—Galveston Bay and Matagorda Bay—both characterized by high contaminant loads and substantial plastic inputs. Liver, kidney, and skeletal muscle digests were filtered and analyzed via pyrGC-MS, and nanoplastic signatures were compared with gastrointestinal microplastic loads from the same individuals to assess cross-tissue accumulation and potential exposure routes. This study provides one of the first tissue-based assessments of nano- and microplastics in wild birds and offers new insight into how plastic contamination accumulates in saltmarsh wildlife. These findings also highlight the feasibility of integrating resident marsh birds into a broader Gulf-wide monitoring framework that couples tissue-level detection with ecological indicators of local pollutant exposure. Together, this approach advances our capacity to evaluate plastic burdens in coastal wildlife and to track emerging contaminants across the Gulf Coast.	201A	9:45 AM	10:00 AM
Piering at sea turtles: Diving into varying sea turtle observations and reported bycatch at northwest Florida fishing piers	Jackson Reimer	For decades, recreational sea turtle bycatch has been reported along the Gulf Coast following anomalous years with a higher-than-average number of bycatch reports. Along Florida's Gulf Coast, Navarre Beach Fishing Pier reports the highest sea turtle bycatch in recent years with 269 sea turtle bycatch reports occurring from 2018-2023. We performed in-water surveys at five northwest Florida fishing piers from 2019-2022 to document sea turtle size, abundance, and composition. Additionally, we collected site specific data on each pier's ecological footprint that may contribute to the differing number of sea turtles observed at each site. A total of 41 sea turtle observations were recorded across 41 total surveys. The quantity, size, and species composition of sea turtles observed appears to align with the reported bycatch records at these sites during the in-water survey period. Facial images confirm that sea turtles were resighted at the same fishing pier across multiple surveys suggesting that some individuals may preferentially visit piers more frequently. GLM models indicate that site specific factors may contribute most to the variation in sea turtle observations across the surveys. Quadrat images of each pier's fouling communities reveal significant differences across the sites; however, there are less differences between the sites with higher rates of in-water sea turtle observations suggesting that other factors could be driving the variation in observations. Social factors (e.g. fishing practices) and the surrounding environment of these piers may better elucidate the site specific differences. Additional survey strategies could provide further information about individual sea turtles that are frequently spotted at fishing piers. The results of this study and future studies addressing social factors and the environmental context at fishing piers are necessary to understand and mitigate sea turtle bycatch at Gulf Coast fishing piers.	204A	9:45 AM	10:00 AM

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Title	Speakers	Description	Location	Starts	Ends
Remote Sensing and Machine Learning Technologies that Support Avian Management and Habitat Restoration	Alicia Sendrowski	In relation to the Deepwater Horizon (DWH) oil spill, the DWH Natural Resource Damage Assessment Trustees prioritized intentional investments with the capacity to inform future avian restoration and adaptive management activities. For more than a decade, aerial photographic nest surveys and dotting (i.e., counting) analyses have been implemented across the northern Gulf coast. Collectively, this information is maintained within the Avian Data Monitoring Portal (avianmonitoring.com). The approaches, however, are time-consuming and labor intensive to collect and analyze. This talk will focus on novel efforts to extend these datasets using remote sensing and machine learning (ML). We will discuss the utility of ML tools for bird detection including the detection of multiple species of birds and nests. We will also discuss novel ways of using aerial and satellite imagery for habitat classification to make predictive maps of bird nesting areas. Using Queen Bess Island, LA, as a case study, we will analyze time series of remote sensing imagery and the use of ML tools to better understand habitat changes following island restoration and gain deeper insight into bird-habitat relationships. The results of this work can be used to inform future restoration planning efforts and help facilitate the design of effective and more efficient monitoring surveys.	202B	9:45 AM	10:00 AM
Exploring Insurance Complexities from a Community Perspective	Dottie Reid	Locally and regionally, Louisiana hosts a wealth of lived experiences in the field of disaster recovery. Louisiana Sea Grant (LSG) seeks to harness that knowledge through partnerships of area experts to design a program focused on raising knowledge and understanding of insurance complexities. For example, we intend to aid understanding of the distinctions between coverage by homeowners and flood insurance and the limitations of each. We plan to provide information about why a policy holder might consider both policies. Ultimately, the project goal is to empower the consumer to make informed decisions about their insurance needs in coastal communities. To achieve this goal, LSG will host a series of round-tables and focus groups with community partners to understand needs and data gaps. This information will be used to create a series of outreach materials to help coastal communities understand these insurance issues. Through factsheets, short videos, social media posts, and outreach events, this project aims to provide accurate, accessible, and understandable information about insurance. The topics covered in this project will be chosen based on suggestions and requests from community members, such as residents and extension agents. While this project is taking place in Louisiana, the resources and outcomes are designed to be replicable for communities across the Gulf of America.	201C	9:45 AM	10:00 AM

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Title	Speakers	Description	Location	Starts	Ends
ASCE 24-24 Elevation Requirements: Transitioning From Freeboard to Risk-Based Design	Carol Friedland	U.S. flood losses continue to rise due to intensifying rainfall, sea-level rise, and compound coastal processes, with Gulf Coast communities among the most impacted. Traditional elevation requirements under the NFIP and prior ASCE standards relied on Base Flood Elevation plus uniform freeboard. While simple, this approach yields uneven levels of protection, where identical freeboard corresponds to <150-year return periods in high-energy coastal environments but >700-year inland—producing inconsistent resilience and affordability outcomes across communities. The 2024 edition of ASCE 24 introduces a probability-based elevation framework linked to Flood Design Classes, requiring protection aligned with target flood probabilities (e.g., 500-year for typical buildings; 1,000-year for critical facilities). When paired with CRS, this update creates a powerful opportunity: probability-based design can help communities earn CRS credit not only for elevation standards (Activity 430) but also for higher regulatory standards, equity-based mitigation, and long-term insurance affordability. This paper introduces a generalizable method for deriving probability-based design elevations using widely available hydrologic information—supporting ASCE 24-24 adoption even where detailed flood models are not available. Validation against federal datasets shows strong agreement with published elevation guidance. Cost-benefit analysis indicates that probability-based elevations yield significant reductions in flood losses and insurance premiums with modest added construction costs, typically recovered within a decade. For CRS-participating Gulf Coast communities, ASCE 24-24 enables a scalable path from “points-focused” progress to true resilience partnerships, strengthening flood-safe development, reducing long-term risk, and supporting sustainable affordability for residents.	201D	9:45 AM	10:00 AM
Dive into Deep-Sea Habitats with Real-World Science	Sasha Francis	The education and outreach initiatives of the Mesophotic and Deep Benthic Communities restoration projects are connecting classrooms, communities, visitors to aquariums and museums, and future marine scientists to the important seafloor ecosystems of the deep Gulf. From free, phenomenon-based educational resources to aquarium and museum exhibits in all 5 Gulf states, engaging videos, livestream opportunities, and more, there is a way for all ages to develop meaningful connections to these hard-to-reach ocean ecosystems and restoration work. Learn about colorful corals, fascinating creatures, human impacts, seafloor mapping, underwater robots, and careers through work happening right now to restore deep-sea coral communities injured by the Deepwater Horizon oil spill. Ready-to-use, NGSS-aligned activities include mock coral collections with remotely-operated vehicles, species ID video games, deep-sea mission board games, scavenger hunts, coloring pages, animated shorts, a children's book, live connections with scientists at sea. These resources serve classroom teachers, informal educators, families, communities, and adults looking for careers in marine science. After hands-on demonstrations of interactive educational materials and a viewing of highlights from livestream broadcasts, participants will leave the session with a full understanding of how to use these free activities and resources for all ages. Some options are already available in Spanish with more to come this year!	203B	9:45 AM	10:00 AM

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Title	Speakers	Description	Location	Starts	Ends
Enhancing Capacity for Risk Communication in Vietnamese-American Communities	Tracie Sempier	Living in coastal areas in the northern Gulf of Mexico is extremely challenging due to many natural and anthropogenic disasters. It has been even more difficult for people who make a living on the water. Vietnamese-Americans in this region are particularly affected by natural disasters as their livelihoods are bound to the shrimping and fishing industry. Currently there are no radio stations on the coast that broadcast weather in Vietnamese, no television stations on the coast that have a Vietnamese translator, and no resources provided by local municipalities on the coast that have weather information translated into Vietnamese. This presentation will detail results from a partnership between Boat People SOS, NWS New Orleans, NWS Mobile, and the MS-AL Sea Grant Consortium to improve severe weather communications to vulnerable Vietnamese-American community members within the northern Gulf of Mexico that face language and cultural barriers to receiving critical risk-reducing information. A variety of methods were used to reach our target audience including education-focused promotion campaigns, through a variety of communication channels targeting different subgroups within the Vietnamese community, including those with various levels of English proficiency, health literacy, digital literacy, and science literacy. Severe weather messages were posted in English and Vietnamese languages on social media accounts and messages were disseminated on magnets, flyers, and mailers to the community-at-large during outreach events. We will also discuss language and cultural barriers that weather communicators must be aware of when communicating with the Vietnamese-American community and ways to overcome these barriers. Partners will detail how the project has increased understanding of weather-related risks and communication products by Vietnamese-American families and businesses that will improve decisions that are made when severe weather threatens the area.	201C	10:00 AM	10:15 AM
Developing Methods to Link Flood Risk to Fiscal Impacts to Build Local Planning and Decision Making Capacity	Thomas Douthat	ulf communities face growing fiscal pressure as flood hazards intensify and aging drainage and roadway systems require costly upgrades. Yet local governments often lack tools that translate flood risk into the budgetary terms used by parish councils, finance offices, and assessors. This project develops and tests a framework that links community-level Average Annual Loss (AAL), parcel-scale flood exposure, and flood-related infrastructure expenditures directly to local revenue structures and long-term budget planning. We integrate outputs from hydraulic and hydrodynamic models with parcel-level property data to estimate how flood depth–frequency changes alter community AAL and the distribution of damages across building types. These risk metrics are paired with data from parish assessors to quantify implications for assessed value, taxable property bases, and revenue volatility in both high-risk and rapidly developing areas. In parallel, we estimate exposure-driven public costs—such as roadway deterioration, drainage maintenance, and emergency response—under varying flood scenarios. This combined approach provides a long-term fiscal view of flood risk that moves beyond structure-level damages to capture system-wide financial impacts borne by local governments. We apply the framework in South Louisiana communities where assessors, planners, and public works staff are working to align hazard data with budgeting and capital improvement processes. Early results show that incremental increases in flood frequency can produce measurable declines in taxable value while simultaneously increasing drainage and roadway maintenance needs—generating two-sided fiscal stress that is rarely accounted for in planning decisions. By linking community AAL estimates, infrastructure exposure costs, and local revenue dynamics, this project offers a transparent, locally adaptable method for integrating flood risk into budgeting and assessments. The framework supports assessors, planners, and elected officials in evaluating mitigation investments, prioritizing capital projects, and strengthening long-term fiscal resilience in flood-exposed Gulf communities.	201D	10:30 AM	10:45 AM

Thursday May 7, 2026

Title	Speakers	Description	Location	Starts	Ends
Engaging stakeholders in developing a common framework for the Adaptive Capacities for Transformation (ACT) Initiative	Robert Gasior	In this session, the Gulf Research Program (GRP) at the National Academies of Sciences, Engineering, and Medicine will discuss the process, outcomes, and lessons learned from engaging stakeholders through its Adaptive Capacities for Transformation Initiative (ACT). Participants will gain a basic understanding of group concept mapping; strengths and weaknesses of the methodology; and learn about the shared adaptive capacity priorities in each Gulf location. ACT is a 10-year initiative to promote transformative sciences as a strategy to achieve greater social impact with Gulf communities. Under ACT, the GRP has been building the capacity of local stakeholders to better adapt to disasters and their cumulative impact on the health and resilience of their communities. Building adaptive capacities has and will continue to involve strengthening existing and developing new assets—knowledge, skills, abilities, resources, and strategies—that communities can use to adjust to harm or damage, take advantage of opportunities, or respond to the consequences of stressors and disasters. With the promotion of transformative sciences, building adaptive capacities has and will continue to be driven by robust stakeholder engagement that accounts for the interconnectedness of assets, the structural and relational conditions of asset mobilization, and the systems and functions that underpin the health and resilience of Gulf communities. The GRP is proposing a session with local stakeholders from all three regions that participated in the GCM process. The session will be grounded by a demonstration of GCM with a focus on the role of stakeholder engagement and its complementarity to different aspects of transformative sciences. In following, the GRP will lead a facilitated discussion with local stakeholders on the outcomes (e.g., alignment of stakeholders on shared priorities, sharing of assets among stakeholders) and lessons they learned from participating in the GCM process. Speakers: Francisca Flores, Program Officer, The National Academies of Sciences, Engineering, and MedicineSteven Scyphers, Associate Professor and Chief Sustainability Officer, University of South AlabamaLance Slater, Chief Resilience Officer, City of MobileAshley Williams, Director of the Center for Health Communities and Assistant Professor of Surgery, University of South Alabama Health Danny Patterson, Coalition Coordinator, Gulf States Health Policy CenterDavid Gilkeson, Community Resilience Officer	202A	10:30 AM	12:00 PM
From Community-Informed to Community-Led: Advancing Gulf Conservation Through Stakeholder Engagement, Community Science, and Local Advocacy	Suraida Nanez-James	Effective and enduring conservation in the Gulf depends on centering the knowledge, priorities, and leadership of coastal communities. This presentation highlights an approach to developing and maintaining community-led Other Effective Area-Based Conservation Measures (OECMs) through stakeholder engagement, community science, and participatory monitoring. By integrating local ecological knowledge with scientific methods, communities can co-generate data that inform adaptive management while ensuring that conservation actions reflect local values and livelihoods. We share lessons from the America the Beautiful for All Coalition's collaborative initiatives across the Southeastern U.S. that demonstrate how inclusive engagement—from fishers and Tribal nations to youth and faith-based organizations—builds trust, transparency, and resilience in conservation planning. The session also explores strategies for empowering communities to advocate for themselves in policy arenas that shape their futures, including offshore drilling, habitat restoration, and fisheries management. Through training, capacity-building, and participatory mapping, communities are supported in articulating their priorities, navigating governance processes, and influencing decisions that affect their coasts and waters. Ultimately, this work advances a model of conservation that is not only ecologically sound but socially just—where OECMs become vehicles for climate resilience, food security, and self-determination. Attendees will gain practical insights into how collaborative science and community empowerment can transform Gulf conservation from being community-informed to being community-led.	203B	10:30 AM	10:45 AM

Title	Speakers	Description	Location	Starts	Ends
Direct Discharge of Wastewater from Unsewered Homes and their Contribution to Nutrient and Pollutant Loading in Gulf Watersheds	Mark Elliott	Unsafe management of household wastewater is a persistent challenge in rural and low-resource areas of the U.S. and other high-income countries (Maxcy-Brown et al., 2023). One illegal but nevertheless widespread alternative in the U.S., primarily in rural areas where soil or geological conditions are incompatible with the operation of conventional septic systems, is "straight-piping." Straight-piping is the direct discharge of untreated wastewater from homes, typically into a ditch or lower-elevation area adjacent to the home. In the "Black Belt" region of central Alabama, sewer is available to roughly 50% of residents; the rest are expected to install and maintain a permitted onsite wastewater treatment system (OWTS). However, the confluence of impermeable shrink-swell clays that preclude the use of conventional septic systems, along with a high proportion of low-income residents who are unable to afford advanced, engineered OWTS, leads to widespread straight piping. Field surveys have shown that a substantial proportion of unsewered homes in the Black Belt use straight pipes (Maxcy-Brown et al., 2021); we use a conservative estimate of 35% straight pipe use among unsewered households in the 17-county region (not including the highly urbanized Montgomery County). We estimate that over 20,000 homes in the Alabama Black Belt have straight pipes that discharge over 3.7 million gallons of raw sewage per day into watersheds that drain to the Gulf. Using average concentrations in household wastewater, this represents approximately 7800 pounds of biochemical oxygen demand (BOD), 1100 pounds of nitrogen, and 200 pounds of phosphate per day, in addition to hundreds of billions of infectious pathogens, endocrine disruptors, pharmaceuticals, and other contaminants. This presentation will contribute estimates of the nature and extent of straight pipe contamination of the Gulf watersheds and enable comparison of the relative magnitudes to other sources of contamination.	204B	10:30 AM	10:45 AM
Microplastics and Health of Waterbirds	Terri Maness	Plastic production has grown rapidly worldwide, yet the health impacts of exposure to microplastics (1–5 mm fragments from degraded or manufactured plastics) remain poorly understood. Research suggests that microplastics may damage internal tissues and affect organism health. This study examines whether microplastic ingestion influences waterbird condition and tests for correlations between ingestion levels and physiological health indicators. We used the percentage of gastrointestinal (GI) tract fat as a proxy for body condition, as these reserves are among the last mobilized during starvation. Dabbling and diving duck carcasses were donated by hunters across Louisiana during the 2013–2014 hunting season, and American Woodcock (Scolopax minor) were collected during the 2023–2024 season. GI tracts were removed and weighed with and without associated fat to determine percent fat. To quantify microplastic ingestion, GI contents were digested in 10% KOH, filtered to isolate 1–5 mm particles, and examined under a dissecting microscope. Dabbling duck species exhibited higher concentrations of microplastics than diving ducks or woodcocks. Within dabblers, we found a negative correlation between percent GI fat and microplastic concentration, suggesting that higher ingestion may be associated with poorer condition. No relationship was detected in diving species or woodcocks. These findings contribute to understanding how microplastic exposure may affect waterbirds in Louisiana and may help inform future plastic pollution policy.	201A	10:30 AM	10:45 AM

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Title	Speakers	Description	Location	Starts	Ends
Use of Scanning Electron Microscopy and Energy Dispersive X-ray Spectroscopy (SEM-EDS) to Detect Oil Exposure in Teeth of Bottlenose Dolphins for Natu	Wayne McFee	Developing methods to determine the timing of oil exposure of protected species, such as bottlenose dolphins (Tursiops sp.), prior to death would be an important tool for natural resource damage assessment investigators. Teeth contain a permanent record of trace element accumulation throughout an animal's lifetime. This uptake can be influenced through diet and atmospheric inhalation. A SEM-EDS has a solid-state EDS detector which has increased sensitivity compared to older instruments that can detect trace amounts of geochemical elements. Our results suggest that this SEM-EDS can detect oil signatures in the dolphin growth layers (GLGs) of teeth. If dolphins are exposed to oil just prior to death, nickel (Ni) and vanadium (V), two common elements in crude oil, should appear in higher concentrations in the GLG closest to the pulp cavity of the tooth where the most recent GLG was deposited. Trace element concentrations in teeth from bottlenose dolphins that stranded alon the northern Gulf of America (GOA) coastline pre-, durng, and post- Deepwater Horizon (DWH) years (2010-2013) were compared to bottlenose dolphins that stranded during the same time periods in two areas suspected to have not been impacted by the oil spill (Sarasota, Fl in the GOA and South Carolina in the Atlantic Ocean). Results showed detection of Ni and V almost exclusively in teeth of dolphins that stranded in the norther GOA during the DWH oil spill period. All exposed dolphins were from the Grand Isle/Barataria Bay region of Louisiana, an area that was heavily oiled and negatively affected local bottlenose dolphins. 60% of samples analyzed from the impacted animals contained detectable levels of Ni and V. Nickel and V signatures were not detected in any dolphin tooth samples pre DWH or during DWH in Sarasota dolphins, but Ni and V was detected in two dolphins from Sarasota post DWH. Nickel and V signatures were not detected in any tooth samples from dolphins stranded in South Carolina. These results could assist natural resource managers in assessing dolphin exposure to oil spills both spatially and temporally, as well as for other odontocete species that reside in the northern GOA (e.g., sperm whale, Physeter macrocephalus) which culd have been negatively impacted by the DWH oil spill and future spills.	202B	10:30 AM	10:45 AM

Thursday May 7, 2026

Title	Speakers	Description	Location	Starts	Ends
Adaptive Restoration of the Deer River Marsh Complex: Advancing Beneficial Use of Fine-Grained Sediments on the Western Shore of Mobile Bay	Matthew Wahn	The 275-acre Deer River marsh system, one of the largest intact marsh complexes along Mobile Bay's western shore, provides vital habitat for fish, shellfish, birds, and wildlife while buffering nearby industrial and residential areas from storm surge and wave energy. In 2018, the Mobile Bay National Estuary Program (MBNEP) received funding from the National Fish and Wildlife Foundation's Gulf Environmental Benefit Fund and National Coastal Resilience Fund to design and implement restoration measures addressing decades of shoreline erosion, marsh degradation, and impaired hydrology in the Deer River Watershed. Overall project goals include stabilizing eroding shorelines, re-establishing tidal exchange and hydrologic connectivity, elevating marsh elevation to enhance resilience, and demonstrating the beneficial use of dredged material to create habitat. Following years of design and coordination with the U.S. Army Corps of Engineers, Phase I construction began in fall 2023. Work included dredging the Middle and South Forks of Deer River to improve circulation and recreational access and using thin layer placement techniques to keep river derived dredged material on site to raise adjacent marsh elevations. Offshore, an island complex was constructed using containment dikes built from in-situ material and filled with approximately 250,000 cubic yards of dredged material from the Mobile Harbor Deepening Project. Segmented rubble-mound breakwaters were also installed as permanent wave attenuators and to encourage natural pocket beach formation along the bay shoreline. Post-construction evaluations revealed that the fill material was predominantly fine-grained. Consequently, the final marsh platform consolidated to an average elevation of +1.0 ft NAVD88 rather than the minimum design target elevation of +2.5 ft. This outcome triggered adaptive management during winter 2025-2026. Planned corrective actions include excavating a tidal creek through the 19-acre island to improve drainage, re-stacking dredged material to achieve the desired elevations, and placing 20,000-25,000 cubic yards of supplemental sand along the bay side to facilitate pocket beach formation and shoreline stability. This adaptive management phase represents an important learning opportunity for optimizing the use of fine-grained sediments in coastal restoration. While coarse-grained material is preferred, it is important that coastal resource managers navigate design and construction activities using finer sediments. By documenting performance and sediment response, MBNEP and its partners aim to develop transferable guidance for maximizing ecological value and cost efficiency when coarse-grained material is limited, advancing resilient, nature-based shoreline management across coastal Alabama.	203A	10:30 AM	10:45 AM

Thursday May 7, 2026

Title	Speakers	Description	Location	Starts	Ends
The end of the line: Shoreline fishing surveys on seafood consumption in Tampa Bay	Noëlle Boucquey	Along the shoreline of Tampa Bay, everyday folks try their luck at a beautiful catch much like those in many coastal communities around the Gulf, America's waterways, and beyond. At the same time, these communities were recently challenged by back-to-back catastrophic hurricanes (Helene and Milton) and face longer term stressors such as harmful algae blooms, economic shocks, and complicated relationships with Gulf policy makers and scientists. This paper explores the preliminary findings of a year-long interdisciplinary social science survey conducted by undergraduates and faculty partners across 6 sectors of Tampa Bay to evaluate shoreline fishing habits and risk perceptions among shoreline fishers. These early results offer intriguing overall insights into fishers' typical patterns of fishing site choices, time spent fishing, and most popular species targeted. Moreover, they demonstrate patterns in risk avoidance, including insights into community-knowledge and suspicions about seafood contamination and the ways it impacts fishers' behavior. They also provide early insights into who fishers trust in making consumption decisions, which is extremely helpful to public health authorities and managers of public resources. Beyond consumption, our results also indicate how fishers have responded to hurricanes and resulting changes in available shore fishing locations. The patterns established by this study can contribute to a deeper understanding of seafood and coastal hazard risk analysis among coastal communities across the Gulf and also provide an important window into how historically recognized contaminants (e.g. sewage) rank among contaminants of emerging concern (e.g. PFAS). As the study progresses further, we look forward to developing additional insights in conjunction with physical analyses from the marine scientists on our broader team.	201B	10:30 AM	11:00 AM
Louisiana parishes with highest and lowest household damage sensitivity to marginal flood-depth changes	Fahmida Akhter	We present a flood-risk assessment framework that integrates hazard, vulnerability, and exposure elasticities to identify locations where mitigation yields the greatest benefit. Using Fathom flood hazard data for Louisiana's 64 parishes, the framework employs depth - frequency (stage - return period) curves fitted with generalized extreme value (GEV) distributions and Markov Chain Monte Carlo (MCMC) methods to characterize probabilistic flood behavior across coastal, fluvial, and pluvial sources. To capture physical and social dimensions of risk, we disaggregate the National Structure Inventory (NSI) and synthesize household-level demographic data using IN-CORE to reflect race, income, insurance status, and housing tenure. Households are randomly allocated to structures at the block level via Monte Carlo simulation, enabling fine-grained estimation of damages. We compute three elasticity metrics: (1) depth–damage elasticity (vulnerability), measuring the marginal change in damage from increased flood depth; (2) exposure elasticity, reflecting changes in affected population or assets with event magnitude; and (3) return-period–damage elasticity (hazard), quantifying how expected damages shift with changes in event frequency. Concave segments of damage and exposure curves indicate high-sensitivity areas where the marginal return on mitigation is greatest. Standardized mitigation increments of 6, 12, and 18 inches demonstrate how small reductions in flood depth disproportionately increase return periods and lower damages, particularly where damage functions are steep. This technical methodology enables efficient targeting of flood resilience measures by mapping elasticity scores and identifying priority locations for investment. By linking hazard modeling, synthetic populations, and probabilistic loss estimates, this approach advances equitable and cost-effective planning. It supports the goals of FEMA's National Flood Insurance Program and Community Rating System by guiding communities toward mitigation strategies that maximize flood risk reduction and insurance premium benefits.	201D	10:45 AM	11:00 AM

Title	Speakers	Description	Location	Starts	Ends
Beneficial Reuse of Dredged Material (BUDM): Fowl River Marsh Restoration Using Wet and Dry Thin Layer Placement Techniques	Bryan Flynn	Fowl River marsh spits were slowly succumbing to outside stressors including sea level rise, subsidencce and erosion from boat wakes. The Mobile Bay Estuary Program tasked the ESA/Thompson/Fish-Tec Team with design, permitting and construction of the marsh restoration project. Thin-layer placement (TLP) of dredge material was chosen as a substitute for the sediment that would naturally flow down river and fall out of suspension on the spits. This tactic has been used successfully in marshes nationwide to maintain marsh elevations to combat sea-level rise and subsidence. The thin-layer placement of sediment followed the existing contours of each spit, preserving the natural changes in topography. The thin-layer placement approach increases the overall elevation of the marsh without totally eliminating existing vegetation. Based on future sea-level projections and the monitoring of project success, a second thin-layer placement event was required as "advanced nourishment" to keep pace with sea-level rise. Thin-layer placement was accomplished through both wet and dry methods from a barge or pump adjacent to the spit. The dry thin-layer placement method utilized a conveyor on a barge to propel the fill material into place. The advantage of this method is far less water is required and therefore little to no decant water to filter and monitor. Some areas required multiple passes to acheive the desired fill placement thickness of 8". Wet placement combined a cutter-suction dredge which fluidized material from a support barge and pumps the slurry of material to the desired placement site via flexible pipelines and is dispersed through a nozzle into the final placement location. Temporary containment and dewatering was successfully accomplished utilizing hay bales and coir logs. The sediment was beneficially reused from USACE's Blakely Dredge Material Containment Area (DMCA). Samples from Blakely were compared to the Fowl River Geotechnical Report, to match the light brown, fine to medium grained sand with 10-15% fines and 10-20% organics found on the marsh spits. The material was trucked to the USACE loading area in the Port of Mobile and then transported by barge to Fowl River and each designated marsh spit. The design process identified approximately 42,000 cubic yards were required to cover the spits with 6-8 inches of thin-layer placement. The project incorporates an adaptive management approach, monitoring before, during and after each lift of material to inform the best location, thickness and placement methodology.	203A	10:45 AM	11:00 AM
Microplastic Distribution and Impacts to Diamondback Terrapin, Highlighting Public Education and Future Effects of Sea-Level Rise	Mandi Gordon	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 littoralis). 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. Additionally, we describe how our research-driven results are incorporated into local education and outreach programs through a series of “virtual field trips”. 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.	201A	10:45 AM	11:00 AM

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Title	Speakers	Description	Location	Starts	Ends
Navigating Federal Disaster Aid	Dottie Reid	This presentation will highlight the process of creating a pilot project in Louisiana aimed at navigating federal disaster aid following major disasters such as hurricanes and floods. In 2024, floods caused more than $8.8 billion dollars worth of damage across the country, much of which was caused by tropical storms. Many coastal communities rely on federal aid to help with recovery efforts after these events. Louisiana Sea Grant developed an outreach project to inform residents about the ins and outs of federal disaster aid. At the beginning of the project, investigators hosted focus groups made of coastal community members, such as residents, local floodplain managers, parish emergency management, and extension agents. The focus group participants discussed federal aid challenges their communities face after major disasters. Their insight was crucial to developing ready-to-go resources for emergency events such as factsheets, videos and infographics. While resources have been developed with Louisiana in mind, the content focuses on federal policy issues and is transferrable to other states. To that end, these resources have been used throughout the Gulf and the Southeast during the 2024 hurricane season to respond to needs in other states.	201C	10:45 AM	11:00 AM
Wastewater Detection Canine Program	Cody Aloi	Bacterial contamination of surface waters is a significant challenge in the United States, with many sources of contamination coming from human activities and failing sanitary infrastructure. Traditional methods used to determine human sources of wastewater are time-consuming and costly. The Mobile Bay National Estuary Program (MBNEP) has developed a program using a canine to detect regulatorily relevant levels of wastewater in waterways. Operating costs for canine tracking are estimated to be at least one order of magnitude lower than lab-based microbial source tracking, with markedly faster time-to-detection. Training aids for the purpose-bred canine were created by combining homogenized samples of raw sewage from local wastewater treatment plants (including those in Mobile, Dauphin Island, Fairhope, Daphne, and Lillian). Fecal coliforms and male-specific coliphage (MSC) indicator microbes were enumerated, and the homogenate was diluted to regulatory-relevant levels (with bacterial counts higher than ADEM and EPA guidelines for safe swimming and bodily contact) before imprinting the canine on the odor. Innovative tools - particularly devices that preserve representative odor profiles and support scalability- were adopted to assist in training the canine. In early 2025, the canine demonstrated 99.6% accuracy across 180 nose-to-odor interactions in a controlled double-blind study (10 trials; 18 odors/trial with distractors, probes, controls, blanks, and targets). Subsequent threshold testing indicated canine sensitivity ~9 orders of magnitude beyond a standard analytical limit of detection. An August 2025 environmental assessment showed 100% accuracy at regulatory-level targets with no alerts on distractor odors. As a tangible product from this work, the MBNEP was also able to develop and implement an independent certification from a national police working dog certification organization. Results from this study support canine detection as a rapid, cost-effective complement to conventional approaches for identifying human sources of wastewater in coastal watersheds.	202B	10:45 AM	11:00 AM

Thursday May 7, 2026

Title	Speakers	Description	Location	Starts	Ends
Emerging Tools for Inventorying Wastewater Infrastructure in the Gulf Region	Nelson da Luz	Decentralized wastewater systems (e.g., onsite wastewater treatment systems, septic tanks) can contribute significantly to nutrient fluxes in coastal and estuarial waters. Despite the potential impact of these systems, their contributions to nutrient flux are not well quantified. One of the challenges in quantifying these impacts is that there is often poor geospatial data available on where these systems are located and how many of them are in use. Where records are publicly available, they are rarely comprehensive, often stored in legacy formats, and difficult to access in bulk. This lack of accessibility has resulted in a limited ability by environmental managers, researchers, and other interest holders to quantify the impacts of decentralized wastewater systems as they relate to a range of topics including nutrient fluxes. There are also gaps in data availability for locations served by centralized sewer systems, which can make accurately identifying what type of wastewater service a home has more difficult. Methods in machine learning present a unique pathway for overcoming these data gaps. We present a machine learning model developed for identifying wastewater infrastructure at the land parcel scale, with a focus on model performance in the Gulf region, and the resulting inventory of wastewater system types in the region. The model consistently demonstrates accuracy greater than 80% in states in the Gulf Region. We also present an object detection model for identifying locations of utility hole covers with Google Street View imagery. The model achieved F-1 scores between 0.92-0.96 across 5 spatially distinct held-out test sets in Florida. These machine learning methods serve as elements in an emerging suite of tools for characterizing the extent to which different types of wastewater systems are distributed across the Gulf region and addressing key questions relating to wastewater infrastructure access and environmental impacts.	204B	10:45 AM	11:00 AM
CANCELED TALK Community-Engaged Research at the Nexus of Climate, Environment, Infrastructure and Health: Approaches, Challenges, and Outcomes	Adrienne Katner	Challenges, outcomes and lessons learned from different community-engaged research projects will be discussed, including: community science to evaluate drinking water in rural communities impacted by corroding systems, and in well-reliant communities after floods; project-based education to assess and communicate air quality impacts of an elevated highway; and community based participatory research to assess air quality in a hurricane-impacted fenceline community. Challenges faced included: community distrust; recruitment obstacles; research misinterpretation; data release restrictions; disruptions due to natural disasters; inherent limitations in community-collected data; political impediments; community dissension; and funding constraints. Solutions to overcoming challenges included: strategic partnerships with students, advocates and media to facilitate communication and prompt response; community-requested monitoring to increase recruitment; community-led data sharing and government engagement; community training on acquiring and leveraging data, and on low-cost, evidence-based interventions; monitoring equipment loan program; tactical urbanism and social networking campaigns; deliberative engagement; independent research to establish cause-effect linkages; and leveraging other civic and legal strategies such as Title VI Complaints and Historical Land Use Designations. Outcomes included: an emergency declaration and repairs to water systems; revisions to government protocols; audits of, and lawsuits against, government agencies; funding for government and community partners; informed and empowered community stakeholders; and school and facility closures. This presentation highlights how community-research partnerships can support community-led investigations of pollution sources; in-power community-led collective action; inform development of more culturally appropriate interventions and policies; and elevate the relevance and social impacts of science.	203B	10:45 AM	11:00 AM

Thursday May 7, 2026

Title	Speakers	Description	Location	Starts	Ends
Back-to-back punches: how hurricanes Helene and Milton impacted fishing locations Tampa Bay, Florida	Sherryl Gilbert	There are few things that are more 'Florida' than fishing and start of hurricane season preparations. Florida is commonly referred to as the Fishing Capital of the World with the largest recreational fishery in the country; there are about 3.1 million anglers in the state. Living by the coast provides quick and easy access to fishing locations. However, these regions are also prone to impact by tropical storms and other extreme weather events. The hurricane season of 2024 was brutal on Florida's west coast, causing billions of dollars' worth of structural damage from storm surge, flooding and high winds. Helene produced record storm surge and widespread inundation in the Tampa Bay region, and Milton delivered strong winds and additional surge damage less than two weeks later. Together, these storms resulted in catastrophic damage to several fishing piers and associated facilities, loss of access to key fishing sites, and localized collapse or removal of pile-supported structures. This presentation reviews the results of a year-long social survey directed at Tampa Bay's fishing community to assess the impact of these storm events and provides a glimpse into how resilient these regional fishing communities are to established fishing sites throughout the region.	201B	11:00 AM	11:15 AM
Incorporating Average Annual Loss (AAL) into Hedonic Pricing Models to Evaluate Flood Risk Impacts on Housing Prices in the U.S. Gulf Coast	Mackendy Ceragene	Flood risk is an increasingly important factor influencing housing markets, particularly in the U.S. Gulf Coast region where hurricanes, sea level rise, and urban flooding pose serious threats to residential communities. To address this limitation, this study integrates Average Annual Loss (AAL), a dollar-denominated metric representing the long-term expected annual damage from flooding, into a hedonic pricing framework to quantify how households value flood risk in Louisiana, Mississippi, and Alabama. AAL is combined with structural, geographic, and socioeconomic characteristics and evaluated across ten modeling approaches: five statistical models (Linear Regression, Generalized Linear Models, Mixed-Effects Models, Spatial Lag Models, and Geographically Weighted Regression) and five machine learning algorithms (Random Forest, Gradient Boosting, XGBoost, Support Vector Regression, and Neural Networks). Using R^2, RMSE, MAE, MAPE, and spatial cross-validation, we assess whether incorporating AAL improves the explanatory and predictive performance of hedonic models compared to traditional flood zone indicators. This research advances understanding of how objective risk metrics (AAL) versus categorical designations (FEMA zones) influence real estate markets, with implications for insurance pricing, mortgage underwriting, climate adaptation financing, and equitable housing policy in high-risk regions.	201D	11:00 AM	11:15 AM

Thursday May 7, 2026

Title	Speakers	Description	Location	Starts	Ends
Fowl River Marsh and Shoreline Stabilization and Restoration Project 2025 Marsh Vegetation Survey	Tim Thibaut	The Mobile Bay National Estuary Program funded the 2025 Fowl River Marsh Vegetation Survey through a grant provided by the National Fish and Wildlife Gulf Environmental Benefit Fund. The survey supports the Fowl River Marsh and Shoreline Stabilization and Restoration Project in Mobile County, AL. Project elements include sediment thin-layer placement (TLP) to raise the elevation of tidal marsh platforms at five sites and installation of timber breakwaters to protect their shorelines and wetlands during site recovery. The August 2025 marsh assessment was performed four months after completion of the initial TLP event in April 2025. Vegetation metrics were collected along the same transects surveyed for the pre-project baseline within standard 1-m2 quadrats. 42 vascular plant species were identified across all sites, with greater numbers to the north at Shrout (31 species), Perez Point (29), Lightcap (37), and Tapia (31), and fewer species at Bellingrath (12). Mean % cover was greatest at Perez Point (73.8%), with the other sites ranging from 66.3% to 54.0%. Compared to pre-project conditions, non-native % cover and the total number of non-native species increased at all sites except Shrout. Non-native sharp-scale flatsedge (Cyperus oxylepis) was among the most prevalent species at Lightcap and Tapia. Mexican sprangletop (Diplanche uninervia), first observed in the Fowl River project area in 2024 but not at the project sites, was common at Perez Point, Lightcap, and Tapia. Adaptive management to address non-native plant cover may be necessary to assure recovery and enhancement of marsh ecosystem function at the Fowl River sites, including increased data collection to better assess areal coverage and percent cover, and to identify potential treatment areas. It is recommended that prior to future TLP at the Fowl River sites, a thorough inspection of the upland sediment source be conducted for non-native species.	203A	11:00 AM	11:15 AM
Linking Surface and Deep Oceanographic Features to Deep-Diving Cetacean Distributions Using Long-term Passive Acoustic Data	Alba Solsona Berga	Advances in protected species assessment increasingly rely on diverse data sources and machine learning to improve species distribution predictions and capture complex spatiotemporal dynamics. The dynamic oceanography of the Gulf of America (hereafter, Gulf) supports multiple cetacean species, including data-deficient and endangered species. However, we need to better understand the relationship between ocean dynamics and animal densities and distribution to design long-term monitoring programs and reduce species vulnerabilities to anthropogenic stressors in this heavily industrialized ecosystem. We derived daily species density estimates from a 21-station moored passive acoustic recorder array (2020–2024) and examined patterns in densities of deep-diving cetaceans related to surface and deep oceanographic features, including temperature, salinity, chlorophyll-a, upwelling, eddy dynamics, and the influence of freshwater and the tropical Loop Current. We applied Boosted Regression Trees, a machine learning method, to learn and predict Gulf-wide distributions of these deep divers, testing multiple cross-validation strategies to reduce overfitting and improve generalization. The dataset combined long-term monitoring sites with annually rotating stations deployed across diverse oceanic Gulf regions deeper than 250 m. Predictions show that goose-beaked whales (Ziphius cavirostris) are associated with deep eddies near steep slopes, Gervais' beaked whales (Mesoplodon europaeus) follow surface and midwater eddies, and sperm whales (Physeter macrocephalus) frequent freshwater-influenced regions, avoiding Loop Current waters. These findings highlight how surface and subsurface processes interact with topography to influence cetacean occurrence across the Gulf. Next steps aim to improve predictions by incorporating visual survey data and scaling outputs to relative abundance estimates to enhance stock assessments.	202B	11:00 AM	11:15 AM

Thursday May 7, 2026

Title	Speakers	Description	Location	Starts	Ends
From data gaps to decision support: understanding the role of onsite wastewater treatment systems in Gulf coast water quality	Stephanie Rogers	Onsite wastewater treatment systems (OWTS) are a widely used and cost-effective method for managing household wastewater in the United States, especially in rural and coastal areas. In Gulf-adjacent states, an estimated 20–40% of residents depend on OWTS, with the highest reliance observed in coastal regions. While many systems operate reliably for decades, failure rates may reach up to 40%, suggesting OWTS could contribute more significantly to water pollution than previously recognized. This risk is further amplified by climate-related stressors such as extreme weather events and sea-level rise. Historically, the lack of comprehensive OWTS location data in the Gulf Region has hindered efforts to evaluate their environmental impact. This presentation highlights ongoing initiatives aimed at improving our understanding of OWTS-related nutrient loading in Gulf waterways, including: (1) building a national inventory of publicly available OWTS data and acquiring proprietary datasets, (2) applying machine learning to estimate OWTS densities, (3) modeling pollution potential to identify high-risk areas, and (4) optimizing spatial planning for future infrastructure development. With improved data and modeling, decision-makers are better equipped to craft targeted regulations and resource allocations that address OWTS-related nutrient loading.	204B	11:00 AM	11:15 AM
The Nurdle Patrol Citizen Science Project: Tackling Plastic Pollution One Pellet at a Time	Jace Tunnell	Nurdle Patrol is an international citizen science program that tracks plastic pellet pollution—tiny lentil-sized pieces of plastic called nurdles, which are the raw material for nearly all plastic products. To date, more than 15,000 volunteers have conducted 10-minute surveys, collecting over 30,000 data points from more than 11,000 sites across the United States, Mexico, and 30 other countries. These surveys help pinpoint potential sources of nurdle pollution while also physically removing pellets from the environment. Why does this matter? Nurdles resemble food to marine animals, leading to intestinal blockages and even starvation if ingested. They also act like sponges, absorbing harmful chemicals that can transfer into the food web. Beyond the science, the project raises public awareness, empowers communities to take action, and provides critical data for management and policy decisions aimed at reducing plastic pollution. This presentation will highlight the power of citizen science through Nurdle Patrol: the surprising results from global data collection, stories from volunteers in the field, and how this movement is influencing real-world policy to keep plastics out of our oceans.	201A	11:00 AM	11:15 AM

Thursday May 7, 2026

Title	Speakers	Description	Location	Starts	Ends
Collaborating on Resilience: Developing Community-Driven Coastal Solutions in St. James Parish, Louisiana	Cecilia Hammond	Learn about Collaborating on Resilience (CORE), where Pontchartrain Conservancy worked with the community of St. James Parish, Louisiana to create a comprehensive Coastal Resilience Plan for the parish. We facilitated collaboration between diverse local and regional stakeholders ranging from grassroots activists to local government. The solutions explored and initiated through this project highlight how nature-based coastal resilience can enhance environmental and human health. The CORE process is rooted in extensive community outreach. We provided resources, topical experts, virtual, in-person, and experiential learning opportunities and empowered residents to make decisions about the future of their community. We began with a Community Listening Session and installed five permanent Coastal Hubs in libraries, high schools, and the local hospital with varied coastal education resources. We then held five field trips to demonstrate coastal resilience projects across the state. Examples include a boat trip to plant cypress trees in Manchac, Louisiana and a tour of green infrastructure projects in New Orleans. CORE also included a semester-long collaboration between master's students at the LSU School of Landscape Architecture and the St. James Community to create urban designs for coastal resilience. This involved a resident-guided tour of the parish for students, monthly virtual check-ins with students and residents, and a field trip for high school Environmental Science classes to LSU. Residents gave feedback at every step of the design process, resulting in final designs grounded in local knowledge. The plans center flood resilience, human health, and community beautification. We conducted a Coastal Resilience Index (CRI) for the parish and used the results to inform topics for a series of ten charettes through which stakeholders contributed their priorities and preferences toward the final parish-wide resilience plan. We included government officials and local experts in every charrette, with a focus on integrating residents in decisions being made for their community. This CORE process culminates in a master plan for community-scale resilience. Pontchartrain Conservancy's role in facilitating engagement and collaboration amongst community members, parish officials, academia, students, subject experts, and other stakeholders results in a Coastal Resilience Plan, created by the community, to help guide future projects for St. James.	201C	11:00 AM	11:15 AM
Resilient East Biloxi: A Community Driven Framework for Coastal Resilience	Qiyamah Williams	To effectively pursue community-driven resilience planning, it is essential to engage diverse voices, actively incorporate community partnerships at all levels, and support resilience actions that address locally relevant challenges. With these best practices in mind, the Resilient East Biloxi (REB) Program was developed in 2022 as a community-driven initiative dedicated to fostering sustainable and transformative redevelopment in the East Biloxi community in coastal Mississippi. Through building a collaborative cohort of 11 organizations over 3 years, this program embraces the community's diversity, culture, and heritage, while aiming to address key climate and socioeconomic challenges. The REB program hosts a series of Community Leadership Cohort Trainings and Community Action Events to provide locally relevant science information, capacity building opportunities for local leaders, and catalyze community resilience actions through open dialogue and input from the greater community. In this presentation, we will share the program's cohort learning and collaboration framework that was developed with community partners, the integration of local socioeconomic factors into climate resilience conversations and planning, and the ongoing efforts in expanding this framework to other frontline communities. In addition to highlighting the successes of the program, we will share perspectives on the common barriers and challenges encountered when pursuing nontraditional or holistic community resilience work.	201C	11:15 AM	11:30 AM

Title	Speakers	Description	Location	Starts	Ends
From Wind-Loss Points to Community Partnerships: Mapping Social Inequalities in Hurricane Wind Damage Across Coastal Louisiana	Rubayet Bin Mostafiz	Wind damage from hurricanes is a major yet underrecognized driver of climate losses in coastal Louisiana, where research and planning have traditionally centered on flooding. This study advances a high-resolution wind risk framework linking building-level hazard simulation, extreme-value modeling, and spatial statistical analysis to identify where wind losses are concentrated and which communities carry the greatest burden. Using ASCE wind hazard datasets, 3-second gust speeds across multiple return periods, terrain roughness, and Gumbel distributions, we modeled 50,000 Monte Carlo simulations per structure across 708 census tracts to estimate Expected Annual Structural Damage (EASD) and Expected Annual Dollar Damage (EADD). Results reveal pronounced spatial clustering of elevated losses, with the highest expected annual damages concentrated in low-roughness coastal zones. In some tracts, expected annual losses exceed $3 million, reflecting both exposure to extreme wind hazards and structural fragility. To understand the social landscape of wind vulnerability, we linked tract-level EASD and EADD with socioeconomic and demographic indicators from the 2018–2022 ACS and the 2020 DHC dataset. Higher wind losses were associated with higher-income coastal communities, tracts with larger shares of renters and rural residents, and tracts with higher representation of residents of “other” races. These patterns indicate distinct inequality pathways compared to hurricane-related flood losses. By identifying who is most exposed, why losses are uneven, and where cross-community collaboration can generate the greatest resilience gains, this study reframes wind damage from isolated risk points to an opportunity for partnership-driven preparedness, targeted mitigation, and equitable resilience planning across southern Louisiana.	201D	11:15 AM	11:30 AM
From Marsh to Table: PFAS Burdens in Louisiana Waterfowl and Potential Risks for Hunting Communities	Terri Maness	Per- and poly-fluoroalkyl substances (PFAS) are persistent contaminants in aquatic ecosystems, raising concern for hunting communities that rely on waterfowl for food, culture, and income. We analyzed PFAS in livers of blue-winged teal (dabblers) and canvasbacks (divers) harvested in Louisiana to assess how foraging strategy influences exposure. Divers had higher long-chain PFAS, while dabblers had higher short-chain compounds, consistent with expected differences in foraging strategies. PFOS was the dominant analyte in both species and occurred at concentrations that in many cases exceeded current European recommendations to avoid consumption. These results suggest potential dietary risk for hunters and families who regularly eat harvested ducks and underscore the need for communication and policy responses that address contaminants while supporting the cultural and economic importance of waterfowl hunting.	201B	11:15 AM	11:30 AM

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Title	Speakers	Description	Location	Starts	Ends
CANCELED TALK From Coastlines to Communities: Preparing the Next Generation of Gulf Leaders Through Community-Engaged, Experiential Learning	Mark Besonen	Across the Gulf of Mexico, communities face rapid environmental, social, and economic change. Preparing the next generation of Gulf leaders requires more than classroom learning—it demands experiences that are collaborative, community-engaged, and grounded in real-world challenges. Two complementary programs place students at the center of that work—the Gulf Scholars Program (GSP) at Texas A&M University–Corpus Christi (TAMU-CC) and the Student Workshop on International Coastal and Marine Management (SWIMM), a trinational partnership between the United States, Mexico, and Cuba led by the Harte Research Institute, also at TAMU-CC. Both programs immerse students in hands-on, problem-solving environments, where they work directly with coastal community and partners, locally in the Texas Coastal Bend and at the undergraduate level in the case of the GSP, and trinationally at the graduate level in the case of SWIMM. From working with local businesses engaged in green practices in Texas to socio-ecosystem report cards in Mexico to post-hurricane recovery efforts in Cuba, students engage with stakeholders who help them understand both the science and the people behind Gulf resilience. These experiences build confidence, spark new collaborations, and help students see themselves as part of a larger, Gulf-wide network working toward shared solutions. Rather than treating engagement as an add-on, the GSP and SWIMM weave community partnership into every stage—designing projects, learning from local knowledge, and encouraging participants to collaborate across disciplines, cultures, and borders. The result is a growing cohort of emerging leaders who are not just studying Gulf challenges, but actively contributing to community-driven, actionable, and inclusive resilience across the region.	203B	11:15 AM	11:30 AM
Bridging Science and Society Through Microplastic Outreach and Experiential Learning Programs	Tina Miller-Way	Microplastic pollution has become an urgent global environmental concern, affecting aquatic ecosystems, wildlife, and human health. The Gulf Coast Center for Addressing Microplastic Pollution (GC-CAMP) initiative presents a number of microplastic education and engagement programs designed to strengthen environmental literacy, build technical skills, and promote research for K-12 students, undergraduate students, educators, and public audiences. For the past 3 years, more than 200 students from local high schools have participated in the Strategic Watershed Monitoring Program plus Microplastics (SWAMP+), sampling local water bodies for water quality parameters as well as microplastic abundance through a collaboration with Mobile Baykeeper. Assessments and evaluations have shown that students have learned more about the problems microplastics present, have become more confident in laboratory skills, feel more comfortable being in nature and have recognized their role in environmental stewardship. At the University of South Alabama (USA), undergraduate and pre-college students have participated in guided research projects that encouraged hypothesis-driven inquiry, teamwork, and presentation of findings at academic and community events. Also at USA, a seminar program has featured local and national experts discussing plastic pollution, removal techniques, plastics repurposing, human health concerns and sustainable material management. GC-CAMP has developed a course in plastic circularity currently being offered to undergraduate students. Lastly, various groups of individuals within the GC-CAMP network have participated in several local and regional outreach events sharing research progress, hands-on activities, recycling, and general information about microplastics.	201A	11:15 AM	11:30 AM

Title	Speakers	Description	Location	Starts	Ends
Sustainable Nutrient Management Opportunities for Small Communities with Lagoon Wastewater Systems	Denis Ruto	Lagoon wastewater systems are widely used in small communities because of their low cost and operational simplicity but often fail to meet limits for ammonia, total nitrogen, and total phosphorus, causing eutrophication, greenhouse gas emissions, and regulatory challenges. This research advances sustainable nutrient management for lagoon systems through three integrated studies. A systematic review of 1,003 peer-reviewed papers (1968–2024) assessed nutrient management technologies suitable for lagoons. These were classified by process type, nutrient target, installation location, and development phase. Biological processes dominated (79%), while hybrid systems showed strong potential. A Suitability Index (1-100) integrating nine weighted factors identified the most applicable technologies for small-community lagoons and highlighted barriers to advanced implementation. Life cycle assessment quantified environmental and economic trade-offs across nine scenarios, from baseline facultative lagoons to upgrades with biodomes, iron-dosed upflow anaerobic reactors, aerated gravel-bed reactors, wetlands, and algal systems. Baseline lagoons were most cost-effective ($0.20–$0.30/m^3) but had the highest impacts (3 kg CO_2 eq/m^3; 0.015 kg P/m^3). Upgrades such as aerated gravel-bed and iron-dosed systems reduced eutrophication by 70% with moderate carbon footprint (0.8–1.0 kg CO_2 eq/m^3) and higher costs ($0.86–$1.19/m^3). An Excel-based multi-criteria decision-support tool was developed to integrate environmental, economic, technical, and social factors through analytical hierarchy process weighting, sensitivity, and uncertainty analyses. Addressing nutrient management in small community lagoons is essential for protecting Gulf ecosystems. Many rural communities that rely on lagoon systems discharge nutrients into tributaries flowing into the Gulf, yet their cumulative impacts remain underrecognized in regional nutrient budgets. By enhancing nutrient removal and recovery at the source, this research provides actionable pathways to reduce nutrient loading from small coastal communities, improve water quality, and strengthen the ecological resilience and long-term sustainability of the Gulf ecosystem.	204B	11:15 AM	11:30 AM
Mapping intertidal zones and identifying ephemeral Reddish Egret foraging habitat in the northern Gulf of America	Daniel Guerra	Effective conservation of wading birds such as the Reddish Egret (Egretta rufescens, hereafter REEG) requires the identification and protection of habitat regardless of use (e.g., nesting or foraging). Waders like REEG are dietary generalists, and thus foraging habitat is typically determined by environmental factors such as the depth of water in ephemerally wet (i.e., intertidal) areas. We used remote sensing data to map these intertidal zones using the Modified Normalized Difference Water Index (MNDWI). Following this, we estimated intertidal topobathymetry using identified intertidal zones, NOAA tidal gauge data, and remotely sensed images for the northern Gulf of America in the years 2020 – 2024. We combined this intertidal elevation raster with topography and bathymetry DEMs to create a combined topobathymetry raster for the region. This elevation raster – along with tidal gauge data and preferred foraging depths for REEG – was input to a Tidal Model of Shallow-Water Availability (TiMSA) simulation to determine areas of suitable depth for the considered period. Ultimately, this TiMSA model output raster maps for the northern Gulf displaying the mean number of minutes in a day that a given area is of suitable depth to qualify as REEG foraging habitat. We determined high-frequency foraging habitat from this raster for REEG, with frequently suitable areas likely to be critical to conserving the species. To the extent possible, we repeated the TiMSA model for other wading birds (e.g., Tricolored Heron, Little Blue Heron). The ephemeral nature of suitable foraging habitat for wading birds (e.g., REEG) makes it difficult to identify crucial foraging areas but does not reduce the importance of such areas to the conservation efforts for these rare birds. This model could be repeated with readily available multi-spectral satellite imagery for other areas of interest (e.g., the southern Gulf) if local tidal gauge data is available.	202B	11:15 AM	11:30 AM

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Title	Speakers	Description	Location	Starts	Ends
The Promise and Challenges of Beneficial Use of USACE Dredged Material for the Long-Term Sustainability of Dauphin Island, Alabama	George Ramseur	The Town of Dauphin Island, Alabama (TODI) constitutes one of the most developed barrier islands in the world. It exhibits notable vulnerabilites, particularly a high population density concentrated onto its low, exposed western end and sea level rise forecasts measured in feet by 2070. So, the Island is experiencing increasingly severe land loss and infrastructure impacts. Transformational action required to address the Island's effective, comprehensive loss of elevation versus the sea will require tens of millions of cubic yards (MCY) of material. Key steps the TODI has taken include supporting policy, partnership and engineering and design (E&D) advancements for programmatic restoration at a scale needed to secure the structural integrity of the Island over the next 50 years. This means they must develop means to beneficially use all possible dredged materials mobilized by routine and non-routine USACE Mobile District operations which can save TODI tens of millions of dollars on a typical project and hundreds of millons programmatically, over time while furthering the USACE's new comprehensive goal for beneficial using dredged materials. TODI is ideallly positioned geographically to use much of the 6 MCY dredged by USACE Mobile District every year, most of which is handled close to the Island's east end and is generally placed into nearby open waters to the south. However, making use of much of this material has been restricted by institutionalized permitting processes and sediment suitabilty standards. These have driven operational inefficiencies, lost opportunities and upheld a reliance on offshore sand mining, all to massive increases in cost which directly reduce how much restoration can actually be achieved. USACE Mobile District has recently established E&D that supports the use of a much broader range of generally less expensive material while still achieving sand qualities suitable for the Gulf Islands National Seashore. This presentation will detail the critical relationship of permitting and material resource decisions to restoration costs which crucially limit TODIs most directly accessible and powerful toll for managing the long-term sustainabiility of Dauphin Island. Attention to restoration costs and productive efficiency are all the more important with the fate of generational scale; federal initiative, disaster based or other funding hardly being a given in the future, particularly for small coastal municipalites and local governments like TODI.	203A	11:15 AM	11:30 AM
Panel Discussion: Leveraging Emerging Technologies for Living Resource Management in the Gulf	Julien Lartigue	The sustainable management of natural resources in the Gulf of America (formerly Mexico) faces complex challenges, including changing climate and ocean conditions, habitat loss and degradation, and balancing competing user demands. having heard talks related to areas such as remote sensing, artificial intelligence (AI) and machine learning (ML), autonomous vehicles, and advanced data analytics, this panel discussion will focus on how these technologies are being developed and applied to enhance data collection, improve stock assessments, monitor habitats, and facilitate adaptive management strategies. Our aim is to foster collaboration between researchers, resource managers, and technology developers. This discussion will provide a platform for sharing best practices and accelerating the adoption of cutting-edge tools to ensure the stewardship of the Gulf ecosystem.	202B	11:30 AM	12:00 PM

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Title	Speakers	Description	Location	Starts	Ends
Development of a near real-time, portable sensor capable of microplastic detection in aquatic systems	Anthony Vedral	Microplastics, increasingly prevalent in waters worldwide, pose a threat to ecosystems, industry, and human health. Traditional methods for sampling water for microplastics are cumbersome, involving tedious laboratory processing and analysis over multiple days. This project, led by the University of Alabama, with support from the NOAA Marine Debris Program and the National Sea Grant Program, seeks to introduce a novel, low-cost, portable sensor designed to detect and characterize microplastics in near real-time directly from water sources. The prototype integrates filtration technology, Raman spectroscopy for polymer identification, and machine learning enabled imaging for physical characterization and concentration analysis. Successful development and adaptation of this instrument has the potential to transform the detection capabilities of organizations which have an interest in microplastic mitigation by lowering cost, introducing portability, and exponentially shortening sample-to-analysis time. Additional nanofiltration capabilities aim to provide a selective method for removing microplastics from water, particularly in small-scale, closed systems. A collaborative Research-to-Application Team comprised of academic institutions, Sea Grant programs, industry partners, municipalities, fisheries, and outreach organizations is guiding development to ensure practical use case alignment.	201A	11:30 AM	11:45 AM
The Upper Mobile Bay Beneficial Use Wetland Creation Project: A Paradigm Shift Highlighting Systemic Regulatory Challenges	Meg Goecker	The Alabama State Port Authority faces high annual dredge maintenance costs due to limited management options. The Upper Mobile Bay Beneficial Use Wetland Creation Site Project offers a transformative opportunity to shift the Port's dredged material management toward methods that advance sustainability, reduce costs, and enhance environmental resilience. By applying Engineering With Nature® principles, the project beneficially uses dredged material to create wetlands that have been rapidly eroding along Mobile Bay whilst ensuring commerce in the public berths. The 1,200-acre site will be incrementally constructed over 20 years using containment features designed to protect created emergent and intertidal wetlands from wind and wave energy. A long-term sediment management plan will guide future wetland development, placement schedules, and containment configurations, while adaptive design will ensure reliable use of material from recurring maintenance dredging events. Despite its ecological value, the project has faced extensive regulatory challenges. Satisfying federal agencies (NOAA, EPA, and USACE engineers) onerous inquiries and general understanding of how beneficial use projects are conducted has resulted in a four-year permitting process whilst conversely an ocean dumping permit only took 12-months. None of these federal coordination inquiries resulted in changes to the original design submitted over four years ago but did result in a cost of some $64K per day in unrealized natural capital gains of wetlands habitats and expensive, business-as-usual upland waste of dredged materials for the Port. To achieve future beneficial use restoration projects in the future, there will need to be more coordinated and innovative interagency processes. Programmatic beneficial use of dredged material demonstrates how navigation, cost efficiency, and ecological enhancement can be jointly advanced when regulatory pathways support timely implementation.	203A	11:30 AM	11:45 AM

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Title	Speakers	Description	Location	Starts	Ends
Modeling Inputs, Fates and Effects of Contaminants of Emerging Concern in a large Urban-to-Rural Estuary of the Gulf of Mexico	Steven Murawski	Contaminants of emerging concern (CECs) are defined as those for which there are "...limited data on occurrence, environmental fate, and toxicity". CECs include PFAS compounds (per- and polyfluoroalkyl substances), pharmaceuticals, phthalates, personal care products (PCPs), UV filters, flame retardants, and other substances. All of these contaminants are known to be toxic and some potentially carcinogenic and are this a major concern when they enter the marine environment. Preliminary studies of PFAS in Florida estuaries indicate elevated and problematic concentrations in sediments, surface waters and biota on both coasts. In this study we adapt existing food web models (Ecopath/Ecospace/Ecosim with TRACER) to assess availability, uptake, bioaccumulation and potential for biomagnification of CECs with emphasis on species used for recreational and subsistence consumption. We also develop models specifically to calculate mass balances of inputs and existing stocks of contaminants, focusing on PFAS. How do CECs enter the estuarine environment? Likely sources include non-point source land-based runoff, wastewater treatment outfalls, groundwater intrusion and atmospheric deposition. Sinks include estuarine sediments, biota and exit of CECs in waters flushed from estuaries. Based on empirical studies and hydrodynamic modeling conducted in Tampa bay and elsewhere from relevant literature we parameterize food web-based models including multiple trophic levels of biological components and human consumption of CEC-tainted seafoods. Results of modeling studies highlight where additional empirical studies are required to generate additional data to further constrain model predictions. Further, we highlight spatial patterns of contaminant dynamics and correlate simulations with empirically derived patterns.	201B	11:30 AM	11:45 AM
Rooted in Place: Elevating Local Voices for Coastal Resilience in Alabama's Working Waterfront	Nina Davis	Coastal resilience begins with listening. In Bayou La Batre and the surrounding communities of South Mobile County, Alabama, listening became the foundation for trust and collaboration. Through the Program for Local Adaptation to Changing Environments (PLACE), our team partnered early and often with local organizations to understand how residents experience and respond to flooding, sea-level rise, and other environmental stressors. Together, we built relationships that centered community priorities while connecting local knowledge with scientific understanding to guide practical, place-based resilience actions. With support from Mississippi-Alabama Sea, these partnerships led to a series of community dialogues and a culminating action event focused on flooding solutions. Residents identified areas of concern, explored strategies, and co-designed a rain barrel education and giveaway event at the Cambodian Temple, a site of deep cultural importance. The event provided 65 collapsible rain barrels and bilingual educational materials in English and Khmer, demonstrating how culturally grounded, small-scale actions can spark broader momentum toward resilience. Through these dialogues, community members also expressed interest in longer-term solutions, such as developing resilience hubs, exploring nature-based strategies to reduce flooding, and addressing public health challenges linked to climate impacts. However, many of these goals remain aspirational due to the community's limited capacity and readiness to pursue large-scale funding. Building on this foundation, PLACE and its partners are now working to bridge these gaps by connecting efforts in South Mobile County with those in East Biloxi and coastal Louisiana through a regional, cohort-based community resilience program. By strengthening peer networks, expanding training opportunities, and supporting readiness for future grants, this next phase aims to empower community members to lead resilience planning from within, turning shared knowledge and trust into long-term, adaptive capacity across the Gulf Coast.	201C	11:30 AM	11:45 AM

Thursday May 7, 2026

Title	Speakers	Description	Location	Starts	Ends
On-Site Wastewater Treatment Systems in Coastal Louisiana: Scale, Policy, and Pollution	Aaron Bivins	Although it is widely known that on-site wastewater treatment systems (OWTSs) are potential sources of pollution, the exact magnitude of their contribution in coastal systems has not been determined. Using a historical record of permitted systems from 1990 to 2016 combined with U.S. Census housing unit build data from 1990 to 2023, we estimate that there are approximately 282,200 permitted OWTSs treating household wastewater in the 24 coastal parishes of Louisiana (20 per square mile). Of these systems, 90% are aerobic treatment units (ATUs) that require constant mechanical aeration to achieve proper biological treatment. Inspection programs suggest 50% to 67% of ATUs are dysfunctional, discharging partially treated sewage. Using text analysis of ordinances in the two coastal parishes with the greatest number of systems, we find evidence of a multi-layered and complex system for governing OWTSs at the state and local levels. State-level policy design aligns most closely with “basic” management as described by the U.S. EPA. Although the Sanitary Code requires homeowners to maintain their ATUs, growth has outpaced the capacity of local governments. By combining the OWTS numbers with effluent data, we estimate ATUs in coastal Louisiana release 8.4 million pounds of total nitrogen (TN) and 2.8 million pounds of total phosphorus (TP) into ecologically sensitive coastal surface waters each year. This loading is equivalent to 68% of the TN and 108% of the TP discharged from all the municipal wastewater treatment plants in the entire state. Reducing ATU dysfunction to de minimis levels would reduce average loadings of organic matter, TN, and suspended solids by 660%, 240%, and 490%, respectively. Our findings suggest that the proliferation of dysfunctional OWTSs is likely contributing to the widespread and systemic erosion of water quality in coastal Louisiana.	204B	11:30 AM	11:45 AM
Marine Debris Reduction Through Education and Active Stewardship	Evelyn McQueen	The Mississippi Coastal Cleanup Program (MSCCP) is a non-profit educational program that promotes the conservation of the local marine environment by facilitating active stewardship within coastal Mississippi. The MSCCP was formed with the mission of preventing and removing litter from the coastal environment through education, outreach, research, and cleanup events. This presentation will provide an overview of Mississippi Coastal Cleanup educational presentations, outreach, and activities designed to educate K-12 students and the general public on the importance of reducing marine debris through hands-on activities and actionable changes.	203B	11:30 AM	11:45 AM
Application of Machine Learning for the Classification of Microplastic Images	Mark Ming-Cheng Cheng	Microplastic pollution has emerged as a critical environmental threat, yet traditional spectrum-based detection methods remain limited by high costs, complex preprocessing, and poor generalizability. To address these challenges, we propose Yolov7CS, a novel deep learning framework that enhances the YOLOv7 architecture with a plug-and-play hybrid attention mechanism comprising channel and spatial attention modules. We developed a comprehensive, high-resolution image dataset of seven microplastic types under diverse background conditions, along with the real-world testing and robustness testing platform simulating practical water environments. Yolov7CS demonstrates superior detection performance across controlled, noise-degraded, and real-world datasets, achieving a mean average precision (mAP@50) of 0.955 and F1-score of 0.938. It also outperforms four state-of-the-art models, including DETR and Yolov5 variants, in both accuracy and robustness. Despite a moderate computational trade-off, the model’s accuracy, adaptability, and generalization capacity make it highly promising for scalable microplastic monitoring applications.	201A	11:45 AM	12:00 PM

Thursday May 7, 2026

Title	Speakers	Description	Location	Starts	Ends
High-Tech Terracotta: Assessing the Viability of Beneficial Use Reef Substrates	Blair Morrison	The Mobile Bay National Estuary Program (MBNEP), in collaboration with the U.S. Army Corps of Engineers (USACE), is advancing a pilot study to evaluate the feasibility and performance of 3D-printed artificial reef structures fabricated from dredged Mobile Bay sediments. This work builds on findings from the USACE Regional Sediment Management Program demonstrating that cohesive sediments from the Blakeley Island Confined Disposal Facility possess sufficient rheological and structural properties for direct 3D printing without additive binders. The pilot aims to characterize the mechanical stability and erosion resistance of sediment-based 3D printed substrates in estuarine conditions, along with their suitability for larval settlement and biofilm development. A test reef and reef shards were deployed on the western shore of Mobile Bay in October 2025; periodic monitoring of structural integrity, hydrodynamic interactions, and surface colonization is ongoing. Preliminary results suggest that the 3D printed reef remains structurally sound within the intertidal zone, and that the textured surface of the material is suitable for settlement of encrusting organisms like bryozoans, barnacles, and tube worms. Monitoring into spring and summer 2026 may yield more information about suitability of the material for oyster spat settlement. By comparing durability and functional habitat performance to that of traditional reef materials, the project seeks to determine whether dredged-sediment structures can provide a viable, locally sourced alternative that simultaneously reduces material transport costs, supports ecosystem services, and contributes to confined-disposal capacity management. Results from this pilot will inform scalable design parameters and production pathways for regionally deployable, nature-inspired reef modules that integrate beneficial-use sediment management with estuarine habitat enhancement.	203A	11:45 AM	12:00 PM
ANCHOR The Bayou: A Case Study in Centering Community Voices in Coastal Resilience Planning and Action	Elizabeth Daigle	Less than 50 miles southwest of New Orleans lies Louisiana's Bayou Region, where the humble, hardworking residents of Lafourche and Terrebonne Parishes live a world apart from their city neighbors. Here, men and women with last names like Cheramie and Billiott go to work each day to feed and fuel this nation along waterways like Bayou Lafourche, Bayou Terrebonne, and Grand Caillou, and members of vibrant local Native American tribes take pride in preserving and sharing their rich culture and traditions. What makes this coastal community so precious also makes it very vulnerable. The Bayou Region sits at the epicenter of natural and manmade disasters—from wetlands loss and major hurricanes to Gulf oil spills—that threaten the sustainability of the area and the resilience of its 200,000 residents. Recognizing the value of a community-led solution to strengthen resilience of south Lafourche and Terrebonne communities, Bayou Community Foundation partnered with the Community Resilience Center of The Water Institute of the Gulf to launch ANCHOR the Bayou in January 2025. This three-year initiative identifies community needs and capacity, develops a strategic plan, trains a local leadership cohort, and implements pilot projects to build capacity and resilience. ANCHOR conducted listening sessions, surveys, and focus groups in 2025. Findings shaped a Strategic Plan addressing issues such as housing, transportation, and services for youth and families. A leadership cohort is now developing pilot projects for implementation in late 2026 and 2027. As Bayou Community Foundation CEO Jennifer Armand will present, deep community engagement, partnerships with other nonprofits, and the Foundation's experience in addressing local needs have been central to early success. Securing funding to broaden pilot projects and impact remains a priority. In the panel discussion, ANCHOR Program Manager Elizabeth Daigle will describe the program framework and the power of listening to community voices.	201C	11:45 AM	12:00 PM

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Title	Speakers	Description	Location	Starts	Ends
A Tale of Two City Fish: Contaminant patterns and correlations in red drum and common snook	Kylee Rullo	Because of the Gulf coast's significantly increasing coastal population and highly trafficked shipping ports, concern for contaminants within marine ecosystems—which consequently can threaten the economy and impact human health—is growing. One area of particular concern is Tampa Bay, a highly urbanized estuary located in the center of Florida's Gulf coast. Red drum (Sciaenops ocellatus) and snook (Centropomus undecimalis) are two of the most popular inshore, recreational saltwater fish species in Tampa Bay, prized for their fighting ability and culinary value, and, as such, are logical study species for evaluating the significance of contaminants to animal and human health. Contaminant studies generally focus only on one contaminant class, but our high-throughput quantification methods allow us to examine synergistic effects of multiple pollutants, focusing on sources, transfers, and correlations of several waterway contaminants, including phosphorus-based flame retardants, pharmaceuticals, ultraviolet filters, organochlorine pesticides, fecal sterols, phthalates, polycyclic aromatic hydrocarbons (PAHs), oxidized PAHs, aliphatics, polychlorinated biphenyls, and per- and polyfluoroalkyl substances. Our studies have documented high levels of contaminants of emerging concern in Tampa Bay fishes and this presentation details additional contaminant concentrations in red drum and snook muscle tissue. We document potential seasonal and spatial patterns, potential for bioaccumulation and biomagnification, and relationships to human consumption.	201B	11:45 AM	12:00 PM
Waves of Change for Coastal Community Science: The Impact of Surfrider Foundation's Beach Guardian Program	Aloe Lee	Across the country, marine waste plagues our environment, from water pollution to land erosion and habitat decline. In 2023, the Surfrider Foundation's Maine Chapter created the Beach Guardian Program as an attempt to minimize plastic pollution. The Beach Guardian program leverages a two-prong approach to address both coastal pollution and climate impacts, primarily from severe weather events. Beach Guardians complete both clean-ups and habitat/infrastructure monitoring and input their data into a national database, used to shape single-use plastic policy reform. Since its inception in 2023, the Program has collected over 15,000 pounds of trash. In 2025, the Beach Guardian Program has spread across the Eastern seaboard and into the Gulf, where the program is targeting the removal of waste from offshore rigs Surfrider Foundation's Beach Guardian Program connects community scientists with GIS to track a variety of waste types while monitoring the health of the landscape. It teaches community members the importance of data, as data from clean-ups assist in coastal restoration projects, policy changes, and key information about our changing climate. It allows for collaboration with other environmental organizations and NGOs, state parks and agencies, schools and universities, and more. Aside from its astounding success in cleaning thousands of marine debris off of coastal landscapes and documenting the environmental impact for numerous locations across the nation, the Beach Guardian Program empowers community members to make an impact in the places they care about the most.	203B	11:45 AM	12:00 PM
Regional Sediment Management: Gulf-wide Coordination and Application (GOAA Habitat Resources Team)	James Pahl	The Gulf of America Alliance Habitat Resources Priority Issue Team (HRT)'s Regional Sediment Management Focal Area was developed within the Gulf of America Alliance to serve as a Gulf-wide coordination point for the development of information and tools that inform sediment resource management and facilitate discussions about challenges regarding the availability and allocation of Gulf sediment resources. This working session of the HRT's Regional Sediment Management Focal Area Working Group will discuss how the information and findings presented during the two Gulf Conference sediment management oral sessions apply to the Alliance's current management-application goals, and how they inform the development of the Alliance HRT's 2026-2031 Regional Sediment Management Focal Area work plan. The HRT encourages all conference attendees interested in these topics to attend and contribute to this conversation. Session Agenda	203A	1:30 PM	3:00 PM

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Title	Speakers	Description	Location	Starts	Ends
Gulf of America Alliance Wildlife and Fisheries Priority Issue Team's General Topics and Future Planning	Mikell Smith	Meet Wildlife and Fisheries Team (WFT) leadership and other team members to discuss WFT priorities, how we do business, and to hear team members, in a lighting round format, pitch potential projects that would serve the WFT's work plan now and moving forward into the Governors' Action Plan V (APV). Get a sneak peek at the WFT focus areas and actions for APV. Session Agenda	204A	1:30 PM	3:00 PM
Coastal Community Resilience Team Meeting		The Gulf of America Alliance's Coastal Community Resilience Team (GOAA CCR Team) will have an in-person meeting on Thursday, May 7, 2026, at the 2026 GulfCon Conference in Mobile, Alabama starting at 1:30 pm. This meeting is open to all in attendance at the GulfCon Conference and is intended to inform those unfamiliar with the Gulf Alliance or the Resilience Team of our work in the 5 Gulf states. The meeting will give attendees an overview of the Gulf of America Alliance and its many components that make GOAA a partnership network dedicated to working on issues common to the Gulf region. This will be followed by a deeper dive into the Coastal Community Resilience Team, one of several priority issue teams under the Gulf Alliance that addresses resiliency concerns across the entire Northern Gulf of America. An overview of the Governors' Action Plan, our guiding document for regional priorities, will be provided to attendees. These action plans are approved by each governor of the 5 Gulf states and serve as a guide for action for a period of 5 years. We are currently in the final year of our Action Plan IV and are now authoring Action Plan V to be adopted later this year. A brief review Action Plan IV accomplishments and Action Plan 5 goals will be provided and, time permitting, we would like to invite attendees to contribute project ideas that would support specific actions identified in Action Plan V. In addition, we will have a brief period for Principal Investigators to provide presentations on Alliance funded projects that are within the Coastal Community Resilience Team's purview.	202A	1:30 PM	3:00 PM
Have An Idea That Could Improve Water Resources in The Gulf? BRING IT! (GOAA Water Resources Team)		All are welcome to bring your ideas! The Gulf of America Alliance Water Resources Team will begin this session by reviewing upcoming priorities, followed by lightning talks on priorities and ideas to support improving human and aquatic health as well as stewardship of water resources. Please contact the Water Resources Team Coordinator (kate.harrison@gulfalliance.org) to pre-schedule your lightning talk. Session Agenda	204B	1:30 PM	3:00 PM
Serving the Gulf of America Alliance Data & Monitoring Needs (GOAA Data and Monitoring Team)		All are welcome to the Gulf of America Alliance Data & Monitoring team time. We will discuss what remains to close out the Governor's Action Plan IV, including status of funded projects and the Alliance mapping tools, like the Gulf Online Mapping Open Date Platform (GOMOD). Attendees will also hear from our in-house GIS Specialist on enhancing GOMOD and working with Alliance Priority Issue Teams. Later in the session we will engage in a facilitated discussion on the transition from Action Plan IV to Action Plan V as the team takes on the future role of Data Advisory Committee for The Alliance. Session Agenda	202B	1:30 PM	3:00 PM

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Title	Speakers	Description	Location	Starts	Ends
Investigating Potential for Parental Offloading of Chemical Pollutants in Spotted Seatrout	Alexandra Lee	Sources of contaminant uptake in fishes are primarily through diet and skin absorption. Evidence from various marine organisms, mainly elasmobranchs, suggest contaminants are transferred from the mother to developing eggs/fetuses, a mechanism termed maternal offloading, through lipid transfer, the main source of nutrition to growing eggs. New evidence suggests a pathway for males to offload contaminants through sperm, via lipids they contain, which fertilizes the egg. Chemicals of Emerging and Known Concern (CECs and CKCs, resp.), including PAHs, PCBs, and organochlorine pesticides (OCPs) are known to be lipophilic—preferentially binding to lipids. This study examines the potential for parental offloading of CECs and CKCs in Spotted Seatrout (SST), Cynoscion nebulosis, occupying a highly urbanized estuary, Tampa Bay, along the Gulf coast of Florida. Fish were collected via rod and reel fishing throughout one year with a stratified sampling design in the Bay, with ten fish collected across six regions every quarter. A total of 249 SST were collected, males and females, ranging in size from 23.0-56.3 cm and ages 0-4 years old. Fish were measured for total length (cm) and weighed (g) whole body, gonad, and liver. Accelerated Solvent Extraction (ASE) analyses measured lipid content of livers and gonads, which vary seasonally, peaking prior to spawning (Apr-Sept) and declining thereafter as the fish mobilizes energy resources for the developing eggs. Contaminants are thought to be transferred to eggs during this process. Gas chromatography with tandem mass spectrometry (GC/MS/MS) is used to quantify the presence and concentrations of CECs and CKCs. We expect high concentrations of pollutants in SST tissues and will report on the seasonal and spatial variation in these concentrations in relation to hypothesized pollutant offloading. SST are important to recreational and subsistence fisheries, thus the health of both the fish and fish-consuming-public need to be well understood.	201B	1:30 PM	1:45 PM
Project Step: Utilizing CBPR to Examine Social-Determinates of Health Targeting Environmental Data Using Photovoice	Dawn Bishop McLin	Project STEP uses a community partnership model to look at how environmental conditions and climate change are affecting the health and quality of life for people who live along the Mississippi Gulf Coast. The goal is to make sure that science is not just done at the university level, but is shared, explained, and co-created with the public, especially those most impacted. In this project, community members share their real stories and experiences through Photovoice. This method allows people to take pictures in their own neighborhoods and describe what these images mean to them related to flooding, storms, pollution, heat, and daily challenges. By working directly with local groups and residents, Project STEP connects environmental data with lived experience to better understand health inequities, support local leadership, and encourage communities to prepare for changing weather conditions. This approach strengthens trust, builds community voice, increases confidence in using science, and helps families and neighborhoods advocate for resources that can improve health and build resilience for the future	201C	1:30 PM	1:45 PM
A deep learning approach for automated microplastics detection	Seyed Amirhossein Moghaddas	Microplastics in water pose significant environmental hazards. Current manual approaches for detecting and characterizing microplastics have inefficiency in time, cost, and labor. Recent advances in deep learning-based computer vision approaches have enhanced efficiency, while they suffer from low accuracy for various types of microplastics. This paper presents a size-adaptive ensemble deep learning approach, aiming to overcome the challenge of morphological diversity and automate the detection of microplastics. The approach employs two specialized YOLOv8 models, including a high-resolution model for small particles (e.g., pallets) and a standard-resolution model for large particles (e.g., fibers, films, fragments). The presented approach was implemented and experimentally evaluated using microscopy images. The results show that the approach improved detection accuracy (17.5% increase in mAP50, 32.1% increase in mAP50-95) compared with traditional unified deep learning models. This research advances the ability to automatically detect various microplastics based on computer vision and deep learning.	201A	1:30 PM	1:45 PM

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Title	Speakers	Description	Location	Starts	Ends
Glass Recycling for Coastal Restoration	Julie Albert	The US recycles less glass than other countries due mainly to government policies, lower consumer engagement, and cost. Successful glass recycling facilities are often co-located with bottle manufacturers that recycle old glass into new. However, many communities, particularly those in rural areas and along the coast, lack this infrastructure. Furthermore, recycled glass sand has many potential benefits over natural sand for many applications; for example, it can be made coarser, does not compact as much, and is more resistant to erosion, making it an excellent – and underutilized – material for coastal protection andrestoration. This talk will summarize key research findings from the ReCoast Team on the material properties, ecological safety, and efficacy of recycled glass sand for restoration along the Gulf Coast in both marsh and beach dune environments. Finally, perspectives on how recycled glass sand can complement dredge material in restoring marsh habitat will be shared based on lessons learned from monitoring multiple types of demonstration projects that utilized recycled glass sand, including blow-out repair, marsh creation, and erosion control projects. *Funding: NSF Convergence Accelerator Program, 2137730, 2230769.	203A	1:40 PM	1:55 PM
Panel Discussion: Beyond Engagement: Building Trust, Power, and Lasting Partnerships for Coastal Resilience	Qiyamah Williams	The issue of coastal resilience is often a multi-faceted one as climate and environmental hazards affect communities beyond the immediate physical impacts and often have long-term social and economic consequences. Local community-based organizations are crucial leaders in coastal resilience planning and action to address the challenges associated with these hazards and the need to sustain livelihoods tied to the land and water.This panel provides a platform for locally based CBOs to share insights into their experiences of working in the resilience space. The speakers will discuss the role of co-production and collaborative partnerships in their work, identified needs for funding and capacity support for comprehensive community resilience, and best practices to be considered by organizations interested in fostering meaningful and long-lasting community partnerships.	201C	1:45 PM	2:45 PM

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Title	Speakers	Description	Location	Starts	Ends
Mesoporous Nanostructured Filtration System for Microplastic Removal from Seawater	Mark Ming-Cheng Cheng	Microplastic pollution in seawater environments poses a significant challenge regarding its potential risk to both ecological and biological health, thereby prompting an imperative need for effective microplastic detection and filtration technologies. Conventional microplastic filtration systems, such as membrane, sand, or biological filters, suffer from several limitations, including low filtration efficiency, high operation cost, and limited scalability. To address this, we demonstrate a novel mesoporous nano-array structure filter that enables a fast, cost-effective, and efficient removal of microplastics from marine water. This study evaluated the filtration performance of the developed nanoarray-integrated filtration system and established a spectroscopic calibration method for quantifying microplastic concentrations in seawater. A well-defined mesoporous layered protonate titanate (LPT) nanoarrays were synthesized on silicon carbide (SiC) monolith using a wet-chemical approach. Subsequent ion-exchange with metal cations, including Cu and Ni, was employed to manipulate the porosity of LPT. The filtration performance and detection sensitivity were evaluated under a controlled flow condition. UV-Vis spectrophotometric analysis of the standard polymer solution provided the basis for reliable calibration, enabling accurate microplastic quantification. The filtration results demonstrated that this system exhibited superior filtration efficiency, ranging from 94% to 99.9%, along with high sensitivity, enabling the quantification of microplastic concentrations as low as 0.01 g/L. Furthermore, a comprehensive microplastic detection and capture system was established through the implementation of optical microscopy, Fourier Transform Infrared spectroscopy (FTIR), as well as the data processing assisted by machine learning algorithms, These results highlight the scalable potential of mesoporous nano-array structured filtration system for microplastic capture in seawater, with good integration potential into environmental monitoring framework and advanced water purification technologies.	201A	1:45 PM	2:00 PM
The Barnacle Baseline Project: Assessing Contaminants of Emerging and Known Concern within Tampa Bay using Acorn Barnacles	Layne Leggett	Understanding pollutant uptake by biota in the surrounding waters as well as the spatial linkages and dynamics of these pollutants is increasingly important. The Barnacle Baseline project aims to understand regional and seasonal uptake of Contaminants of Emerging and Known Concerns (CECs/CKCs) in Florida's largest estuary, Tampa Bay, using acorn barnacles (Amphibalanus amphitrite and Amphibalanus eburneus). Barnacles are tolerant of a wide range of salinities and temperatures and have a sessile adult stage, making them an excellent species for site-specific pollution studies and for identifying potential sources of contaminants. To recruit and collect these organisms, glass tiles were arranged within a PVC frame and placed at 17 diverse sites around Tampa Bay. These sites include areas near a variety of contaminant sources including wastewater treatment plants, stormwater and septic systems, as well as control sites. Once the glass tiles were collected, they were photographed for percent cover and community composition analysis, and barnacle soft tissues dissected from each individual. Tissues from each site and season (wet or dry) were analyzed with GC/MS to determine specific CEC/CKC presence and concentrations. Barnacles grown on the tiles during Florida's wet season (May-October) were collected and processed separately from the barnacles of the dry season (November-April) to test the hypothesis that increased rainfall results in elevated concentrations of CECs and CKCs around the Bay. Results from barnacle samples collected at the conclusion of the 2025 wet season will be presented. Using this often-overlooked invertebrate species to gain insights on contaminant sources within Tampa Bay will allow us to further understand pollution threats affecting not only marine species, but also the threats to humans.	201B	1:45 PM	2:00 PM

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Title	Speakers	Description	Location	Starts	Ends
Lessons Learned from Adaptively Managing an Oyster Reef Impacted by Dredged Material	Kathy Sweezey	Beezley Reef is an innovative subtidal oyster reef restoration project in Galveston Bay, Texas. Restored by The Nature Conservancy in 2023, this 40-acre oyster reef includes approximately 25-acres of reef restored with small limestone rocks to allow for commercial oyster harvest and 15-acres restored with large limestone boulders serving as a non-harvestable broodstock sanctuary reef. The Nature Conservancy, Galveston Bay Foundation, and Texas Parks and Wildlife Department developed a monitoring and adaptive management plan for Beezley Reef to document the outcomes of this restoration through December 2025. 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. 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. These data provided valuable insight 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.	203A	1:55 PM	2:10 PM
Characterization of contaminants of emerging concern (CECs) from wastewater effluent and remediation via iron and aluminum electrocoagulation	Anthony Gross	Contaminants of emerging concern (CECs) are broadly defined as any naturally occurring or synthetic chemical species that have not been historically monitored yet present a negative ecological or human health risk when introduced to the environment. There are many sources of CECs to coastal environments, including runoff from agriculture, fire-fighting activities, airports, ports, and wastewater treatment plants (WWTPs). WWTPs are known to act as point sources of these contaminants into the environment via effluent discharges since many WWTPs are not equipped to fully remove these and other contaminants. Advanced WWTP technologies focus on the removal of these and other contaminants from effluent waters through various means. Electrocoagulation is the process of applying electricity to water through sacrificial electrodes that generate coagulants, capturing chemical species into flocculants that are removed via filtration. Two separate electrocoagulation electrodes were tested in this study – iron and aluminum. In total, 82 individual contaminants from the following CEC and CKC (Contaminants of Known Concern) compound classes were characterized: polychlorinated biphenyls (PCBs), phosphorus flame retardants (PFRs), and organochlorine pesticides (OCPs). All groups were characterized via gas chromatography / mass spectroscopy (GC/MS) from WWTP effluent that is discharged into Tampa Bay, Florida. Iron electrode electrocoagulation treatment removed 85% of PCBs and 53% of OCPs from effluent waters, while aluminum electrodes removed 100% of PCBs and 44% of OCPs from effluent waters. PFR removal was highly variable in both electrode experiments, and in some cases, individual PFRs increased after electrocoagulation treatment. Overall, CECs and CKCs of all three compound classes were detected in WWTP effluent, and the electrocoagulation treatment significantly reduced the number and amount of CEC/CKCs found in WWTP effluent water.	201B	2:00 PM	2:15 PM

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Title	Speakers	Description	Location	Starts	Ends
Optimizing Microplastic Removal Using Modified Biochar	Jianqaio Song	Plastic pollution is a global issue that significantly impacts the environment and human health. Plastic debris can come in all shapes and sizes, but those that are less than five millimeters in length are called “microplastics (MPs).” MPs can enter the oceans and lakes via wastewater treatment plants (WWTPs), thereby harming aquatic life. Biochar, as an inexpensive and green material, has gained interest for its potential use in treating and removing contaminants from wastewater. This study compared adsorption of MPs using the following biochar variants: 1) raw pine wood derived biochar, 2) four physically activated biochar prepared at different temperatures (550°C, 650°C, 750°C, and 850°C)3) iron-modified biochar (Fe-biochar), and 4) sand. The results of the adsorption test showed that Fe-biochar had the best performance among all materials, with adsorption capacity over 20 mg-MPs/g Fe-biochar. Activated biochar at 850°C demonstrated the next best capacity approximate 4.55 mg-MPs/g 850-Biochar. These findings show that the negatively charged MP particles are highly attracted to Fe-biochar media, leading to high removal. Further column-based experiments are ongoing to evaluate continuous wastewater flow parameters on the modified biochar media.	201A	2:00 PM	2:15 PM
Fishing for food in coastal Alabama: Two case studies on risk perceptions and consumption among recreational fishermen	Savannah Swinea	The contributions of recreational fisheries for nutrition and food security have been difficult to characterize, in part because measuring the prevalence of consumptive practices has not been prioritized in research or fisheries management. The relative invisibility of fishing for food has made generalizing rules across recreational fisheries commonplace, masking important heterogeneity in behaviors and perceptions. We present two case studies juxtaposing recreational fishermen risk perceptions and fish consumption behavior in the Alabama coastal system. The first case study involved intercepting shore-based fishermen along Mobile Bay, AL from May 2023 to May 2024 (N=355), and the second case study centered on competitors and spectators at the Alabama Deep Sea Fishing Rodeo on Dauphin Island, AL in July 2023 (N=328). Both fishermen samples were asked to describe their fish consumption, risk perceptions, and demographics. When compared to Mobile County, shore-based fishermen had a similar median household income and were disproportionately Black; in contrast, competition fishermen had household incomes above the median and were disproportionately White. In both samples, fishermen ate diverse species and the majority of fish consumed were locally caught. For shore-based fishermen, monthly fish consumption was positively correlated with perceptions of fish cleanliness. For competition fishermen, respondents who were concerned about the fish they eat coming from polluted waters consumed different species, specifically by avoiding offshore, reef fish species and consuming more inshore fish species. The fishermen described here represent frequent eaters of local fish on the frontlines of impacts from contamination and other environmental changes. Improving understanding of nutrient and contaminant profiles in local fish, coupled with consumption and community sharing behaviors, would clarify the role of these practices for food security.	201B	2:15 PM	2:30 PM

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Title	Speakers	Description	Location	Starts	Ends
Evaluation of Abelmoschus esculentus (Okra) Juice for Efficient Microplastic Removal from Aqueous Systems	Tulie Chakma	The growing prevalence of microplastic contamination in aquatic environments poses a significant threat to ecological and human health, necessitating sustainable and efficient removal strategies. This study investigates the potential of Abelmoschus esculentus (okra) juice as a natural, polysaccharide-based flocculant for microplastic removal from water. The okra extract contains long-chain polysaccharides capable of promoting flocculation through a bridging mechanism, wherein polymer chains physically link suspended microplastic particles, forming larger aggregates that can be more easily separated. In this work, a 1000 ppm suspension of polyvinyl alcohol (PVA) microplastics in deionized water was treated with okra juice. Post-treatment analysis using filtration and mass balance indicated a reduction in microplastic concentration to approximately 100 ppm, corresponding to a removal efficiency of ~90%. To further elucidate the interaction mechanism, the untreated suspension, treated samples, and okra extract were characterized using Fourier Transform Infrared Spectroscopy (FTIR), Raman Spectroscopy, and Scanning Electron Microscopy (SEM). FTIR and Raman analyses revealed shifts in characteristic functional groups, suggesting surface bonding interactions between okra polysaccharides and microplastic particles. SEM imaging provided visual confirmation of the formation of flocculated aggregates and adsorption of microplastic particles onto the okra-derived matrix. Overall, the results demonstrate that okra juice serves as an effective, eco-friendly biopolymeric agent for microplastic removal from aqueous systems, offering a promising low-cost and sustainable alternative to conventional treatment methods.	201A	2:15 PM	2:30 PM
Panel Discussion: Microplastics and Beyond: Integrating Science, Technology, and Community Action for a Sustainable Gulf Coast	Shenghua Wu	Building off the talks from this session, this panel discussion provides a platform for dialogue and collaboration among ecologists, engineers, chemists, physicists, oceanographers, social scientists, environmental educators, community collaborators, and policymakers. By bridging disciplines and sectors, including academia, industry, and government, we aim to advance understanding of the Gulf's unique vulnerabilities and accelerate the development of practical, scalable solutions for reducing microplastic pollution. Through shared knowledge and collective effort, this discussion seeks to chart a path toward a cleaner, more resilient, and sustainable Gulf Coast.	201A	2:30 PM	3:00 PM
How does GulfCon Eat Fish?: Experts grapple to unify over Gulf seafood's emergent concerns	Heather O'Leary	"Should we eat it?" Gulf experts—whether local or international, vegan or pescatarian, angler or "landlubber," degreed or practitioner—differ in their risk assessments about consuming seafood. Not all expert types are alike, and with the public looking to experts generally, it is alarming when they disagree. While experts are deeply immersed in one or more aspects that pertain to their consumption choices, they often struggle to describe a unified approach to assessing risk. Their risk concerns are different and can be amplifed according to species, location, and contaminant. Through a comparative approach, this paper integrates social science techniques (surveys, interviews, and ethnographic participant observation) to illuminate how different categories of experts weigh the dimensions of risk. It demonstrates how contaminants of emerging concern (particularly, PFAS "forever chemicals") rank according to established and lesser-known contaminants of concern and to what degree these risks are suspected to impact seafood in the Gulf, its bays, and coastline around the world. NOTE: Special thanks the nearly 400 GulfCon 2024 attendees who took time to complete the survey.	201B	2:30 PM	2:45 PM

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Title	Speakers	Description	Location	Starts	Ends
Gulf of America Alliance Habitat Resources Priority Issue Team's General Topics and Future Planning	James Pahl	This working session of the Alliance's Habitat Resources Priority Issue Team (HRT) will provide further opportunities to discuss findings and implications of the HRT-relevant Gulf Conference oral sessions, following the prior Living Shorelines, Habitat Assessment, and Regional Sediment Management Working Group sessions. This session will also provide time for attendees to discuss the relevance of conference presentations to the goals of the Alliance's Integrated Planning and Human Benefits of Nature Cross-team Initiatives, with which the HRT has coordinated. Since the Alliance will discontinue those initiatives as stand-alone efforts in the future, discussions during this session will also explore interest in incorporating initiative topics into the HRT's 2026-2031 work plan. The HRT encourages all conference attendees interested in these topics to attend and contribute to this conversation.	203A	3:30 PM	5:00 PM