Tidal Marsh Adaptation Project Information Summary Excerpts

The *Tidal Marsh Resilience Information Summary* is an outcome of the initial research phase of the Tidal Marsh Adaptation Project. The summary of tidal marsh resilience information was compiled to identify potential data layers, common marsh resilience topics, and discussion needs to inform stakeholder engagement and the Collaborative Tidal Marsh Adaptation Workshop planned for Fall 2023 (moved to January 2024).

Excerpt from Tidal Marsh Resilience Information Summary:

Coastal Resilience and Wetland Workshops

- 1. 2019 Marsh Resilience Summit Proceedings, Maryland Sea Grant. link
- 2. Large Scale Marsh Persistence and Restoration in Chesapeake Bay: Preliminary Workshop Findings. February 2023. Taryn Sudol, Jenna Clark, Fredrika Moser, Hannah Cooper, Ashley Goetz, Maryland Sea Grant. <u>link</u>
- 3. *Restoring the Wetlands of the Chesapeake Bay Watershed Workshop Wetlands Action Plan.* January 2023. Chesapeake Bay Program Habitat Goal Implementation Team Wetlands Workshop Steering Committee. <u>link</u>
- Resilient Coastal Wetlands and Communities: Workshop Proceedings. U.S. EPA. Office of Research and Development, Center for Public Health and Environmental Assessment, May 2023. <u>link</u>

Large Scale Marsh Persistence and Restoration in Chesapeake Bay: Preliminary Workshop Findings

Large Scale Marsh Persistence and Restoration in Chesapeake Bay: Preliminary Workshop Findings. February 2023. Taryn Sudol, Jenna Clark, Fredrika Moser, Hannah Cooper, Ashley Goetz, Maryland Sea Grant.

Maryland Sea Grant and Chesapeake Bay Sentinel Site Cooperative hosted the hybrid workshop on October 6, 2022, which included 99 participants.

Goal: advance planning and implementation of large-scale marsh conservation in Chesapeake and Coastal Bay regions with focus on environmental justice and outreach strategies for involving communities and private landowners in management decisions.

The workshop convened marsh management decision-makers (e.g., government agencies, land managers, nonprofits, industry, community representatives) to consider which marshes should be protected or restored; how marshes benefit adjacent communities; what role private landowners play in marsh persistence; and how to work among funding sources, regional and local priorities, and scientific expertise to implement marsh projects with the greatest social and environmental benefits.

Output includes summary of marsh project ideas generated and refined in breakout sessions. This preliminary report will be supplemented later with more detailed findings on site characteristics, recommended actions, and key ecological and socioeconomic factors that inform large-scale marsh project criteria.

Thirteen developed large-scale projects were identified, and many others were suggested. Developed project ideas include:

- Large-Scale Marsh and Floodplain Management in the Pocomoke Watershed
- Cedar Island Restoration to Protect Crisfield, Maryland
- Protect and Restore Maryland's Fishing Bay Wildlife Management Area
- Streamlining Marsh Prioritization Tool Use
- How to Legally Accommodate Marsh Migration on Private Land
- Mattaponi Fringe Marsh Project
- Priority List of Large-System, Long-Timescale Projects
- How to "Actionize" Data Sets for Project Implementation
- Criteria-Driven Location Prioritization with Beneficial Reuse
- Crisfield: Designing a Marsh Project with Multiple Benefits
- Vulnerability Assessment of Tidal Freshwater Marshes and Engaging the
- Surrounding Communities

- Restoring the Uppards, Tangier Island, Virginia
- Developing a 50-Year, Multi-System Plan for Tangier and Pocomoke Sound
- Planning and Implementing "Big" Thin-Layer Application Restoration Projects

Project Location	Focus	Benefits
Maryland's Fishing Bay Wildlife	Migration	Habitat: fish, bird, oyster
Management Area (WMA)	Protection	
	Restoration	
Cedar Island	Restoration	Protection (Crisfield)
Pocomoke Watershed (create large	Restoration	Habitat: fish, oysters
scale by connecting non-contiguous	Conservation (protect &	
marshes)	manage)	
Streamlining Marsh Tool Use	Planning/Research	Support decision-making for prioritization,
		funding, strategy; maintain, update and
		outreach needed for longevity.
How to Legally Accommodate Marsh	Planning/Research	Analysis, mapping and engagement for policy
Migration on Private Land		and programs to support marsh migration on
		private and public lands
Mattaponi Fringe Marsh Project	Restoration	Habitat: fish, oysters, submerged aquatic
(Mattaponi and Pamunkey Rivers)	Conservation	vegetation
	Migration	
Prioritization of Large-System, Long-	Planning/Research	Identify and manage areas with 1000+ acres of
Timescale Projects		existing or potential marsh
Criteria-Driven Location Prioritization	Planning/Research	Streamline the targeting of beneficial reuse
with Beneficial Reuse (Dredge		projects
Material)		
Crisfield: Designing a Marsh Project	Restoration	Quantify co-benefits of marshes and
with Multiple Benefits		incorporate these co-benefits into policy and
		funding structures; delve into mechanisms for
		community buy-in with consideration of what
		project features are most desirable (e.g.,
		waterfront access).
Restoring the Uppards, Tangier Island,	Restoration	Create a 20- to 30-year plan to restore the
Virginia		northern Uppards region of Tangier Island,
		virginia, that would include a transition plan for
Developing a 50 Vacr. Multi Sustan	Destavation	resident relocation off the Island.
Developing a 50-Year, Multi-System	Restoration	Multi-system and multi-marsh projects, through
Plan for Tangler and Pocomoke Sound		smaller, interconnected projects concentrated
Diagning and Implementing "Dig" This	Dianning (Decearch	In a particular area.
Planning and implementing Big Thin-	Planning/Research	Investigate now to plan for and implement thin-
Layer Application Restoration Projects		fringe
		marshos
Combined restoration effort in the	Postoration	
Middle Peninsula Virginia	Restoration	
addrossing tidal froshwator wetlands to		
tidal marshes and island marshes		
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Additional project ideas include:

Research

- How to address displacement of agricultural lands, including keeping the balance of land-use types, moving salt-tolerant plants into land, and siting renewable energy within displacement zones
- How to finance carbon sequestration to make carbon credits competitive with the international market
- How to sustain funding for living shoreline creation and maintenance and fringe marsh preservation and restoration in order for communities with environmental justice concerns to build coastal resilience.
- Further understanding of the value of island marshes and their impact on agricultural lands
- Explore enhanced land subsidence occurring where the paper pulp facilities are located as it relates to relative sea level rise.
- Understanding the sociological impacts of large-scale relocation, perhaps exploring options for governmental buyouts, and looking to Smith Island, Maryland, as an example community that might need large-scale relocation.

Implementation

- Bring together non-contiguous marshes to make large-scale impact. Includes prioritizing a specific area and identifying an entity to do initial characterization for area selection. Example: Pocomoke project in floodplains took an integrated approach and created a small working group to address 4,000 acres and 14 miles of river.
- Developed land-owner incentives: outreach to landowners, waterfall effect of outreach.
- Department of Natural Resources has tools and technology but a challenge with addressing equity. Do you put all tools in one basket or spread it out across the state?
- Potomac and/or Choptank River
- Dike and embayed marshes
- Building up multiple marshes along river extent and building access to the water for the public
- Monitoring for 20 years with adaptive management
- Large-scale oyster reef restoration in the shallow waters of the Chesapeake Bay in combination with submerged aquatic vegetation (SAV) and low marsh restoration, taking a full ecosystem restoration approach.
- Combined effort to save the marsh islands, oyster reefs, and SAV beds in Tangier and Pocomoke Sound
- Combined restoration effort in the Middle Peninsula, Virginia, (York, Rappahannock, Mattaponi, and Pamunkey Rivers) addressing tidal freshwater wetlands down to tidal marshes and including island marshes. This area encompasses both saltwater and freshwater habitats.

Marsh Resilience Summit Proceedings

Marsh Resilience Summit Proceedings. February 2019. Maryland Sea Grant.

The Chesapeake Bay Sentinel Site Cooperative (CBSSC), with support of Maryland Sea Grant, hosted a two-day Summit in February 2019. Over 230 community members, scientists and leaders from coastal Maryland and Virginia participated in the event to share research and discuss the impacts of hanging marsh landscapes on natural and developed communities. The Proceedings identifies the multi-faceted issues associated with the impacts of changing marsh landscapes on natural and developed communities and summarize the key topics, priorities and next steps identified during the summit. Key discussion topics include the need for data to measure marsh mobility, health, and resilience; geophysical and hydrological aspects of marsh migration and marsh quality; the economic and social impacts on landowners and communities associated with changing land use; and legal and policy variability across municipalities, counties, and states within the Chesapeake Bay Watershed that affect conservation efforts and resilience strategies.

Eight sessions focused on key themes that are critical to tidal marsh adaptation planning:

- 1. **Marsh migration.** The session focused on marsh dynamics, how to prioritize restoration and conservation activity, the role of practices and policies such as ordinances and buyouts, and knowledge gaps for decision making.
- 2. Environmental Market Mechanisms and Other Conservation Policy Opportunities. This session focused on mechanisms such as credits and risk mitigation programs to incentivize marsh conservation. The group generated ideas about resilience credits and other ways to monetize or value marsh ecosystems services.
- 3. Linking Wetland Conservation and Community Resilience. This session focused on addressing the risks to communities such as lowered property value, infrastructure damage or loss, and increasing vacancies, particularly in marginalized and vulnerable communities.
- 4. **Co-Benefits of Marsh Conservation.** This session reviewed the benefits marshes provide including resilience, water quality, and habitat value, and discussed the importance of quantifying the value to support decision making and communication about marsh benefits.
- 5. Lessons Learned from Management Techniques and Restoration. This session highlighted the processes and marsh attributes such as water and nutrient availability and soil matter that are important to consider in marsh preservation.
- 6. **Dredge and Beneficial Use.** Presenters shared updated information about the beneficial use of dredge material for marsh restoration and shared the complexities of the strategy related to policy, sediment suitability, and cost.
- 7. **Lessons Learned on Living Shorelines and Thin Layering.** The presentation focused on living shoreline benefits and design, and participants discussed approaches to encourage widespread

adoption by communities and private landowners to reduce shoreline erosion. Presenters also shared information about several thin layer pilot projects in Chesapeake Bay.

8. **Marshes, Agriculture, and Industry.** The discussion focused on the effects of sea level rise on coastal agriculture, and approaches to working with private landowners to adapt land use practices that can support property value and community prosperity.

Key priorities identified across the topics include:

- Increased **collaboration** among a diverse set of stakeholders to plan, prioritize, and implement equitable, sustainable solutions to living with and managing marsh dynamics.
- An organized **information exchange** that is accessible to a variety of stakeholders including scientists, community members and educators is needed to facilitate research, create outreach materials, inform policy planning and more.
- **Cost-benefit analysis for coastal land use** to identify and prioritize conservation efforts, a process complicated by the uncertainties of marsh movement and effects on ecosystem services, limited data, and the variety of stakeholders' goals, values, and capacity.

CBSSC identified three specific priority areas identified during the summit to support through existing and future efforts, including:

- 1. Expand **research synthesis** to support assessments and investigations of sea level rise rates and community impacts.
- 2. Broaden the **dissemination of scientific information** and support guidelines for consistent data collection, quality control and management across the six dates and District of Columbia.
- 3. Facilitate conversations about marsh migration and coastal land use change through CBSSC's wide network of partners.

Restoring the Wetlands of the Chesapeake Bay Watershed Workshop Wetlands Action Plan Restoring the Wetlands of the Chesapeake Bay Watershed Workshop Wetlands Action Plan. January 2023. Chesapeake Bay Program Habitat Goal Implementation Team Wetlands Workshop Steering Committee.

In August 2022, the Chesapeake Bay Program's Forestry Workgroup (in the Water Quality Goal Implementation Team) and the Habitat Goal Implementation Team sponsored a workshop to address two outcomes associated with the 2014 Chesapeake Bay Watershed Agreement--riparian forest buffers and wetlands--that were considerably off target. The Restoring Wetlands of the Chesapeake Bay Watershed Workshop resulted in an Action Plan that outlines recommendations to address the barriers to reaching tidal and non-tidal wetland goals and steps to implement approaches identified during the workshop to meet those goals.

Barriers. The Action Plan begins by framing several factors that increased the challenge of meeting wetland targets. The 2014 agreement assumes a wetland baseline based on the assumption that tidal wetlands are static, and that the federal "no net loss of wetlands" policy coupled with voluntary wetland protection efforts would increase the rate of wetland creation, restoration, protection, and/or enhancement. However, the effects of climate change along with widespread exceptions to the "no net loss" strategy, are causing wetlands to disappear more quickly than volunteer or funded efforts can restore or protect them. The plan examines the barriers to identify approaches that will support successful outcomes. The barriers include: the wetland model itself (which does not account for climate change effects on tidal wetlands); the peripheral prioritization of wetlands as a co-benefit for funding programs rather than a driver (reducing the participation of voluntary enhancement) which has reduced resources and capacity for wetlands restoration, creation, and enhancement. The report indicates that "In any given year, less than 3 percent of the USDA and DOI project money spent in the watershed went to wetlands creation, restoration, and enhancement. "

Approaches. The workshop identified several themes specific to tidal and non-tidal wetlands for prioritizing wetland restoration, overcoming financial limitations and developing new capacity and leveraging existing capacity to support wetland goals. Participants learned about several projects that can serve as models for new efforts.

For tidal wetlands, themes included: 1) the need for dedicated funding for wetlands (wetlands as a driver, rather than a co-benefit); and 2) techniques for site selection and restoration. The four projects that were presented as innovative examples include: Lower Wicomico River Maintenance and Dredging/Deal Island Wildlife Management Area (WMA) Marsh Restoration, Hog Island WMA Shoreline Stabilization Project in Virginia, South Wilmington Wetlands Project in Delaware, and the Anacostia Corridor Restoration Plan. In each of these projects, wetland improvements were a co-benefit, not a project driver. For tidal wetlands, key themes for approaches included developing and engaging a network of landowners, increasing capacity, and improving access to funding. The six projects presented explored different funding and partnership models, and focused on capacity to engage landowners, capacity to work within partnerships, program flexibility and funding.

Funding. The workshop included a discussion about funding opportunities (documented in a summary including sources, amounts and timeframes for availability) that might be available to support the action plan projects.

Recommendations. The Action Plan organizes recommendations within four themes that were identified as critical for meeting the program goals: strategic planning, capacity building, outreach (landowner/community engagement), and sustainable funding. The report proposes responsible parties and timelines for many of the recommendations.

Overall recommendations include: 1) establish a management board to facilitate check-ins and support agencies responsible for wetlands outcomes; and 2) maintain the living resources outcome database to track progress towards wetlands outcomes.

- Strategic planning
 - Recommendation: Scientific Technical Advisory Committee should provide recommendations on restructuring the wetland goal to incorporate restoration opportunities and wetland loss and consider developing a strategy to address this need.
 - Recommendation: Develop a list of conservation-ready projects.
 - Recommendation: Climate Resiliency Workgroup can assist with identifying resilience metrics for tidal wetlands and identify marsh adaptation projects through GIT-funded project.
 - Recommendation: Perform targeted outreach in identified priority areas to increase effectiveness of efforts.
- Building capacity
 - Recommendation: Create state or regional restoration workshops to leverage partner capacity and expertise and access funding
 - Recommendation: Joint training. Develop joint training meetings for regulators and practitioners to ensure that regulators and applicants understand the needs.
 - Recommendation: Update technical guidance on wetland restoration techniques, varying by physiographic province.
 - Recommendation: Hire specific outreach specialists within programs (Upper Susquehanna River Coalition, Ducks Unlimited (DU), and TNC) who can develop a list of willing landowners and projects that can be in the que for restoration.
 - Recommendation: Pool research and monitoring of restored wetlands. This may be a function that STAR/STAC could prioritize.
 - Recommendation: Develop a comprehensive nuisance species plan including animals such as Canada geese and white-tailed deer.
 - Recommendation: State and Federal legislatures could explore increasing buffer requirements on proposed development to slow/combat wetland loss.
- Landowner/community engagement
 - Recommendation: Increased dedicated outreach capacity to engage landowners.
 - Recommendation: Pay farmers to grow wetlands.

- Recommendation: Expand on existing and develop new specific outreach materials for landowners and community (such as WetlandsWorks.org).
- Recommendation: Identify specific funding that can be used for landowner easements outside Federal programs; practitioners' workgroup to brainstorm restoration options.
- Sustainable funding
 - Recommendation: Replicate the Maryland Conservation Finance Act, which incentivizes conservation and restoration activities using green and blue infrastructure, to other states.
 - Recommendation: Ensure that the unprecedented amount of funding included in the Bipartisan Infrastructure Legislation and the Inflation Reduction Acts, and the grant programs associated with this money can be used for short- and long-term capacitybuilding, design, and implementation.
 - Recommendation: SRF should prioritize wetlands restoration. Currently money is often being left on the table because applicants would rather pursue grants over low interest or even no interest loans. Incentivizing landowners to consider SRF for Blue, Teal, or Green carbon projects in wetlands could help push more landowners in the SRF process.
 - Recommendation: Use the weekly Bay Brief newsletter from the Bay Program to list active funding opportunities.
 - Recommendation: Work with funding sources to reduce or eliminate match requirements. EPA has already asked for a Waiver for Match for some of its funding.
 - Recommendation: Develop Sentinel Landscapes with Department of Defense facilities that renew wetlands and provide long-term funding for wetlands restoration that will have a trickledown effect with Bay Program partners to support long term funding.
 - Recommendation: Leverage private funding to support organizations to continue to advance wetlands outcome.
 - Recommendation: Wetlands workgroup coordinates with NFWF to encourage language in grants that promote wetland and forest buffer projects.
 - Recommendation: EPA's Clean Water State Revolving Fund (CWSRF) has historically been used mostly for wastewater and regulated stormwater infrastructure, but wetland projects have long been eligible.
 - Recommendation: Use Clean Water Act Mitigation Bank/In-lieu Fee programs to build longterm capacity within programs.
 - Recommendation: Explore ways to use NRCS Agricultural Conservation Easement Program (ACEP)-WRE, CRP/CREP for long term capacity building and landowner outreach work in tidal wetlands.

Summary. The report summarizes the following consistent themes underpinning workshop discussions and emphasizes the dire need for dedicated funding and staff to streamline the many multifunctional programs that currently drive voluntary wetlands creation, restoration, and enhancement projects at local, state, and federal levels.

- 1. Cohesive strategy for tidal and nontidal wetlands across the watershed for site selection and priorities that take into consideration 10 goals and 31 outcomes associated with the Chesapeake Bay 2014 Agreement.
- 2. Dedicated increased long-term capacity is needed to accelerate efforts –because of the time and complexity to complete wetland restoration projects, grant funded capacity does not retain and grow expertise.
- 3. Outreach and design are priority areas to grow capacity to increase the pipeline of projects and advance them to implementation.
- New and increased funding should be directed to the states to build wetland capacity. This is critical to be able to access and leverage increased federal funds that will be available.
- 5. Management Board representatives meet formally with all the agencies within their jurisdictions to report progress of the wetlands outcome attainment annually.

Resilient Coastal Wetlands and Communities: Workshop Proceedings

Resilient Coastal Wetlands and Communities: Workshop Proceedings. May 2023. U.S. EPA Office of Research and Development, Center for Public Health and Environmental Assessment.

EPA Office of Research and Development Center for Public Health and Environmental Assessment convened over 100 participants for a two-day workshop in May 2022 to share information and ideas about resilient coastal wetlands and communities. The event included representatives (resource managers, restoration specialists, scientists, decision makers and other practitioners) of government agencies, academic institutions, private companies, and non-governmental organizations from across the Mid-Atlantic and Northeast regions. The workshop Proceedings documents summarize the content presented during sessions and the interactive discussions that highlight opportunities to advance coastal resiliency.

Themes

- What is wetland resilience? Considerations for how to define and measure resilience and assess vulnerability were explored; summary points follow:
 - *"Resilience is determined by the combination of sensitivity and adaptive capacity of the system when exposed to climate and other environmental stressors."*
 - Wetland resilience requires adaptive measures and management actions to protect wetlands to enable them to continue providing ecological and social services in face of climate change disturbance.
 - Indicators include increased acreage of connected habitat, increased elevation, capital, decreased erosion rates, increased ecological diversity, and increased natural hydrology.
 - Participants ranked increased acreage of unfragmented habitat as the best indicator of wetland resilience. Social indicators were not perceived as a significant indicator for wetland resilience.
 - The CPB climate resiliency goal "aims to increase the resilience of the Chesapeake Bay's living resources, habitats (including wetlands), public infrastructure and communities to withstand adverse impacts from climate change."
 - Presentations shared frameworks for addressing coastal wetland problems that focus on the relationship between vulnerabilities, threats and impacts to guide actions. CBP's climate change indicators represent exposure, impact and resilience indicators which link threats and ability to respond.
 - A presenter shared a framework for tool selection to help users navigate the decision support and assessment tool options (Proceedings, figure 3).

- For the Tidal Marsh Adaptation Project, the Proceedings pose a pertinent consideration that consideration for how future marshes should be preserved – whether by maintaining the same extent, location, distribution, class and/or services.
- How to manage for resilience within changing environmental conditions? This topic covered adaptation approaches to increase resilience considering climate change challenges, and practical aspects such as site selection, evaluation, design interventions and socio-ecological trade-offs were explored.
 - The content presented addresses how to prioritize where to act, and what to do.
 - Presenters provided information about many decision-making tools, models, and assessments (vulnerability assessments, condition assessments, impact assessments) that have been developed to support marsh adaptation efforts. The tools can help users select sites, design approaches, and identify appropriate tactics and interventions to meet adaptation objectives, particularly at smaller scales. A table with links to information about tools referenced during presentations is included in the Proceedings document. MarshRAM, WATCH, SLAMM and GreenPrint are some of the decision support tools and models reviewed.
 - Of five management aspects (site selection, working with marsh migration, social economic considerations, designing adaptive interventions, identifying/evaluating strategies) participants indicated they spend the most time working with marsh migration and selecting sites.
 - An overarching management question posed which is also applicable to site selection for the Tidal Marsh Adaptation Project is whether to focus on the most vulnerable sites or on stable locations.
 - The MarshRAM model was presented; the tool might be considered for use in the Tidal Marsh Adaptation Project for comparing projects at the site-level scale; the tool supports prioritization of sites for restoration, conservation, and management.
 - Selecting which tool is appropriate to use in each situation might be difficult given the wide variety available. Several tools described during the workshop might be helpful for stage two of the Tidal Marsh Adaptation Project when site level evaluation is helpful to prioritize projects.
 - A social-ecological framework, SESAME, was presented for engaging stakeholders and partners in community-focused adaptation projects that include consideration of marsh values for human health and community resilience.
 - More effort to quantify marsh value for communities and analysis of costs and benefits for social and ecological impacts will support projects that include robust resilience benefits for both ecosystems and communities. Socio-economic assessments that estimate monetary values of services such as carbon sequestration were shared; no

methods or initiatives for assigning monetary value to other intangible services such as recreation and protection were suggested.

- Trade-offs among social and ecological costs and benefits were addressed. RAMP was designed to integrate the work of partners, and results in standardized methods for monitoring and assessment and increased capacity and efficiency across multiple agencies. A presentation about a project leveraging the SESAME model indicated the value of greater engagement, input, and collaboration alongside additional challenges of managing larger, diverse groups of constituents which complicated making decisions, balancing objectives and requirements, and sharing responsibilities.
- Linking resilient wetlands to resilient communities. Presentations addressed community and human benefits linked to the protective value of coastal wetlands as well as other wetland values and ecosystem services that support human health and well-being.
 - Ecosystem benefits, such as shoreline and flood protection, water quality and aesthetics, are the most recognized link between wetlands and community resilience.
 - Flood and erosion protection services provided by coastal wetlands support communities by protecting infrastructure, buildings, and human supported land uses such as agriculture. Living shorelines have become a visible intervention valued by communities to provide protection using adaptive measures.
 - Maryland's coastal resiliency assessment identifies areas prone to coastal flooding and erosion and then maps protective coastal habits to target protection and enhancement measures that also mitigate human risk.
 - Wetland and community resilience can be measured by quality, persistence and sustainability using indicators of ecosystem function, property value, cultural value and mental health outcomes.
 - In addition to ecosystem protection benefits for communities, human-health focused benefits such as mental health, recreation, water quality and carbon sequestration were presented.

Strengths, Challenges/Gaps, Emerging Principles

The workshop proceedings include a synthesis of input gathered during interactive sessions including discussion and polls that shed light on practitioners' views of the strengths, challenges/gaps and emerging principles in the field of marsh adaptation.

- Self-reported strengths include: the professional community's ability to translate and share scientific information; working with partners and stakeholders and addressing implementation barriers and opportunities; working through uncertainty and capacity building for boosting expertise and resources.
- Challenges include: selecting decision support tools for specific situations; capacity building through dedicated funding for staff to support coordination and knowledge dissemination of

resilience activity and community-focused outreach and training; technical research around wetland management tactics, monitoring management impacts, linking management impacts to community health, and understanding unintended consequences; overcoming barriers around buy-in, funding and permitting; and most significant, improving **political will** by building relationships with local governments to reduce implementation barriers.

 Participants reported the following emerging principles that require focus to advance efforts around coastal wetland and community resilience: coordination among partners and stakeholders through shared information platforms and use of common frameworks; communication among practitioners as well as outreach to stakeholders for shared learning; shifting planning horizons from short-term to long term objectives; standardizing approaches such as monitoring performance metrics and assessments (recognizing some analysis requires site-specific metrics and modeling); and focused efforts to identify needs of environmental justice communities that can be addressed or mitigated through wetland resilience efforts, and elevating the implementation of projects in socially vulnerable communities.