Hampton-Seabrook Estuary Collaborative

Prospectus 2021-2022

June 24, 2021

Prepared by ROCA Communications in collaboration with the
Hampton-Seabrook Estuary Collaborative Steering Committee

roca
communications+

Contents

Acknowledgements

Suggested citation: Jalbert Leonard, D., Dionne, R., Lucey, K., Mattera, T., Meaney, C., (2021) Hampton-Seabrook Estuary Collaborative Prospectus 2021–2022

1. About the Hampton-Seabrook Estuary Collaborative

Who we are

The Hampton-Seabrook Estuary (HSE) Collaborative is a group of local, state, and federal organizations focused on improving the long-term health and vitality of the Estuary and its communities. We are scientists, engineers, policy makers, technical assistance providers, consultants, and educators who want to collaborate more effectively to provide the science and data that communities need to understand, manage, and protect the Estuary. (See appendix A for more on the HSE Collaborative.)

Our vision

A thriving Hampton-Seabrook Estuary that benefits surrounding communities for generations to come.

Our goal

We seek to align our collective resources and activities to improve the long-term health and vitality of the Estuary and its surrounding communities. To this end, the HSE Collaborative is exploring near-term opportunities for collaboration that will set the stage for longer-term monitoring, adaptive management, and restoration within the Estuary. Wherever possible, these efforts will support the Seabrook-Hamptons Estuary Alliance in its efforts to develop an Estuary management plan.

Why now?

With the region at or near complete build out with impervious surfaces, the Estuary's ecological and social infrastructure are at greater risk from climate change impacts and development. There has been an increase in efforts to understand the Estuary's biophysical system, maintain navigation, improve habitat health, and reduce the impacts of flooding. This uptick in activity makes it challenging to understand what's been accomplished, track new initiatives, and avoid duplication of effort. By building awareness of each other's work, the HSE Collaborative aims to ensure our efforts are mutually supportive, contribute to commonly shared goals for the Estuary, and set the stage for longer-term, more robust monitoring, adaptive management, and restoration.

2. About the Hampton-Seabrook Estuary

The Hampton-Seabrook Estuary (Figure 1) is a bar-built estuary on the New Hampshire Coast. Situated behind barrier beaches and surrounded by more than 4,000 acres of tidal marsh, the Estuary is a central feature of the towns of Hampton, Seabrook, and Hampton Falls. These communities are dependent on the Estuary for tourism, commercial and recreational fishing, and its capacity to hold important infrastructure, such as evacuation routes and nuclear power. The Estuary flows over approximately 475 acres at high tide and encompasses 72 miles of tidal shoreline. It has a drainage area of 46 square miles and is fed by six tributaries, including the Taylor, Hampton Falls, Browns, and Blackwater rivers and the Cains, Brook/Mill, and Hunts Island creeks. It is home to coastal New Hampshire's last remaining sand dunes and its most productive clam flats.

Hampton-Seabrook is one of two estuaries of national significance in the state and possesses geomorphic and biotic features distinct from the Great Bay Estuary. Hampton-Seabrook is also of regional significance within the Gulf of Maine, with the Great Marsh to the south and Maine marsh complexes to the north. These differences offer abundant opportunities for research that compares the impacts of climate change and anthropogenic activity across diverse estuarine systems, as well as efforts to test the effectiveness of management strategies to enhance the conservation, connectivity, and resilience of marshes and the resilience of nearby communities. Home to two thirds of the state's salt marshes, the system is beset by accelerating sea level rise, the agricultural and mosquito control legacies of ditches and embankments, loss of sediment sources, and invasive species such as *Phragmites* and green crabs.

Learn about the Estuary, the functional values of its salt marshes, and the primary threats they face: Video TS 10:00–10:24 & ppt.

Figure 1
Hampton-Seabrook Estuary

A. Eberhardt, D. Burdick, 2008
Hampton-Seabrook Estuary Restoration Compendium

3. Catalyzing Collaboration: Surveys & Webinars

In late 2020, the first steering committee for the HSE Collaborative convened, engaging representatives from U.S. Fish & Wildlife Service (USFWS), New Hampshire Coastal Program (NHCP), PREP, and the Seabrook-Hamptons Estuary Alliance (SHEA). See Appendix A. Their primary goal was to guide the development of a framework to describe mutual objectives for the Estuary, identify opportunities for near-term collaboration, and make recommendations to enhance the Collaborative in the future.

To this end, a survey of coastal science and management organizations was conducted to better understand existing and needed science and data, and three webinars were held to discuss topics of shared interest and identify ideas for how to enhance collaboration in the near future (Figure 2). The survey and the webinars were designed to help identify opportunities to leverage planned activities and existing resources to support these collaborations, develop new ideas for grant proposals, and a future work that builds on the social and scientific capital currently directed toward the Estuary.

Figure 2
Exploring Opportunities for Collaboration
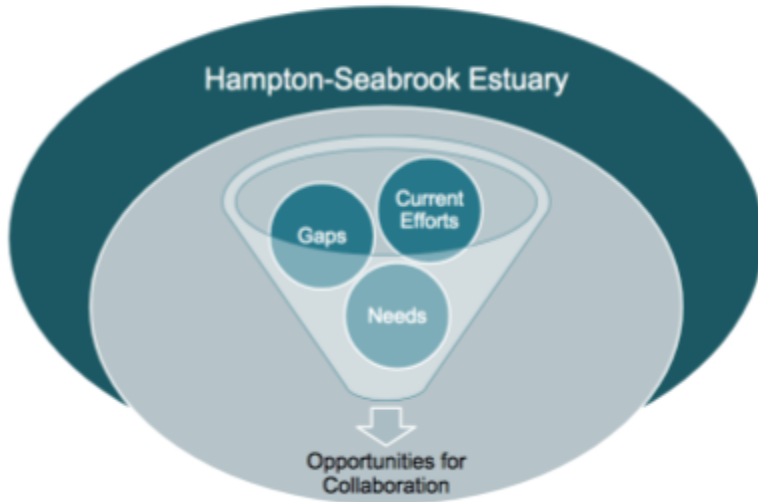
The steering committee combined a survey and iterative webinars to identify topics of highest interest, gaps in science & data, and opportunities to collaborate.

A. Survey of Coastal Science and Management Organizations

In December 2020, a survey was sent to representatives of 30 organizations engaged in research, monitoring, and management related to the HSE. The survey explored their work and goals for the Estuary; existing and needed science and data related to water quality, salt marshes, fish and wildlife, and water levels; and ideas for collaboration.

Thirty-four individuals from 25 organizations responded. They came from the private, public, and academic sectors and from organizations that operate at the community, state, regional, and/or national scale. Their responses indicated there were resources and needs across the four topics queried, but there was a cluster of interest, existing work, and data needs around science, monitoring, and management related to salt marsh habitats (Figure 3). Survey results informed three subsequent webinars to explore this nexus and the development of the Hampton-Seabrook Estuary Commons.

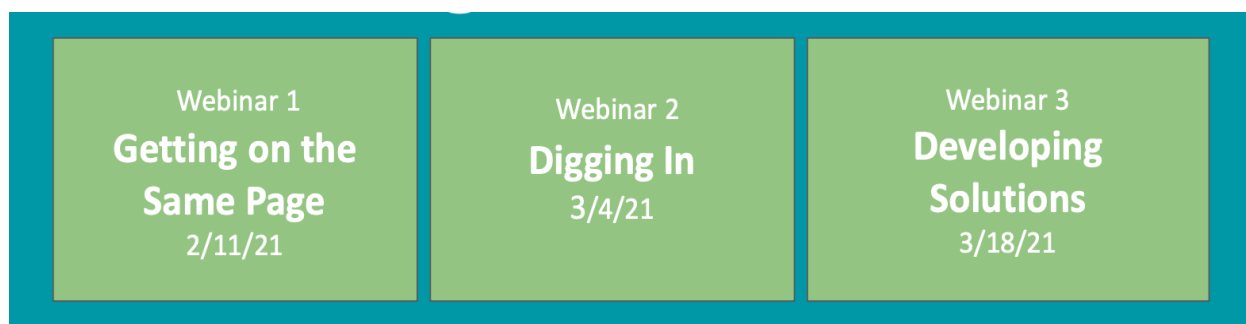See this presentation for more results from the survey.

Figure 3
Word Cloud of Organizational Missions

The survey indicated that habitat protection and restoration were highly relevant to the organizational missions of respondents.

B. Hampton-Seabrook Estuary Working Webinars

Webinar 1 **Getting on the Same Page** 2/11/21	Webinar 2 **Digging In** 3/4/21	Webinar 3 **Developing Solutions** 3/18/21

Using the survey results as a guide, three webinars were organized to discuss existing and needed science related to salt marsh management and opportunities to collaborate. Salt marshes were selected as a focus because they are of interest to the majority of organizations surveyed; the need for data and science to support salt marsh management is great; and healthy marshes have a positive effect on the entire system. In effect, marshes are a topic where the "activation energy" for collaboration is low and potential for action is high.

During the first webinar, "Getting on the Same Page," participants explored management goals related to HSE salt marshes, research questions to support these goals, relevant science and resources, and data needs identified in the survey and augmented by steering committee members. Marsh management goals selected for discussion were consistent with those being considered for the developing Hampton-Seabrook Estuary Management Plan (Table 1), an initiative that is led by SHEA and sponsored by the NHCP and the NH State Conservation Committee.

Table 1
HSE Salt Marsh Management Goals Explored in Webinar

Potential HSE Salt Marsh Management Goals

Flood Storage & Mitigation	Diverse Wildlife & Vegetation	Recreation & Scenic Beauty
• Bank erosion	• Invasive species control	• Accessibility
• Accretion/Subsidence	• Protected/Endangered species	• Species abundance & diversity
• Marsh migration	• Marsh migration	• Marsh migration
• Hydrology	• Water quality	• Water quality
• Stormwater management	• Hydrology	
	• Stormwater management	

An overview of research goals, models, and questions related to salt marshes suggested several focus areas for near-term collaborations to address gaps in science and research related to marsh management. These included the extent of saltmarsh sparrow breeding in marsh habitats; the condition of selected marshes (i.e., diversity, proportion of high to low marsh, etc.); changes in soil elevation in marshes; and flooding depth and duration. Conceptual models (Figure 4) that informed these research

focus areas are consistent with those used in PREP's Research and Monitoring Plan.

This webinar also explored existing data and science-based tools to support salt marsh management (Figure 5). This included data on elevation, sediments, avian use, marsh ditching, restrictions at tidal crossings, and tidal range ratios at culverts. Models discussed included SLAMM (Sea level Affecting Marsh Mode), which is planned for a rerun by New Hampshire Fish & Game in 2021, and living shoreline site suitability, as well as a range of other current and planned modeling efforts.

Available tools include a marsh scale framework to assess resilience, a developing, consensus-based plan for New Hampshire salt marshes, and past assessments. Significant management tools and projects included a report on conservation and public lands, various salt marsh restoration projects and efforts to control pepperweed and *Phragmites.* Despite this rich diversity of resources, there are significant research and data gaps related to the science-based management of marshes, as indicated by the survey. These were also reviewed. (See a summary of Webinar I here, including presentations and ppts.)

In the second webinar, "Digging In," scientists from the region gave lightning presentations on salt marsh monitoring, sparrows, sediments and water levels, and monitoring. These presentations were selected for their relevance to research questions and data and science needs identified in the first webinar. They provided a framework for subsequent discussions of related gaps and ideas to address them. (See a summary of Webinar 2, including presentations and ppts.)

Figure 4
Conceptual Model
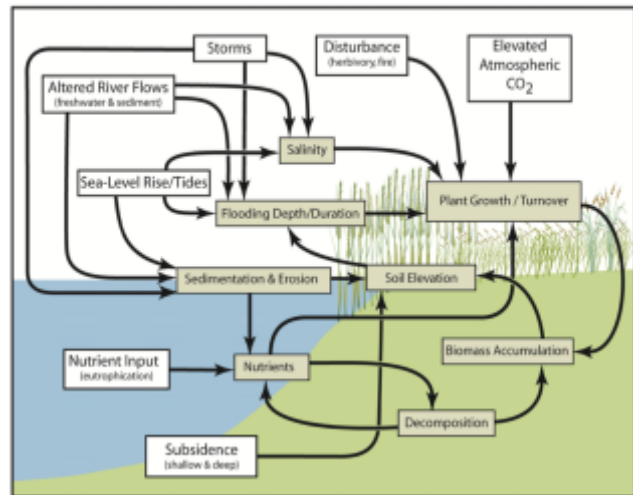
Conceptual model based on Cahoon, D.R., D.J. Reed, A.S. Kolker, M.M. Brinson, J.C. Stevenson, S. Riggs, R. Christian, E. Reyes, C. Voss, D. Kunz. 2009. Coastal wetland sustainability. Pp. 57-72 in Coastal Sensitivity to Sea-Level Rise: A Focus on the Mid-Atlantic Region. J.G. Titus, lead author. Washington, DC: U.S. Climate Change Science Program.

Figure 5
*Salt Marsh Habitat Data Needs in the HSE*

Data needs related to salt marsh habitats in the Hampton-Seabrook Estuary.

The third webinar built on these discussions and a group generated padlet (online discussion board) to elaborate on specific science and data gaps related to salt marsh monitoring, avian conservation, and marsh migration, as well as ideas for collaboration. Marsh monitoring focus areas included vegetation, water levels, sediments, and elevation.

Avian conservation topics included species location, breeding areas, marsh condition, elevation, prioritizing marshes for intervention and refuge, tern surveys, roosting, nekton (transient/resident), impact of burrowing crabs, and other key habitats like shellfish beds that may have a relationship with marsh habitat. Last, the webinar explored conservation opportunities to support marsh migration in this densely developed region of the coast (Figure 6). (See a summary of Webinar 3, including presentations and ppts, here.)

Figure 6
Seabrook-Hamptons Estuary Potential Conservation Land
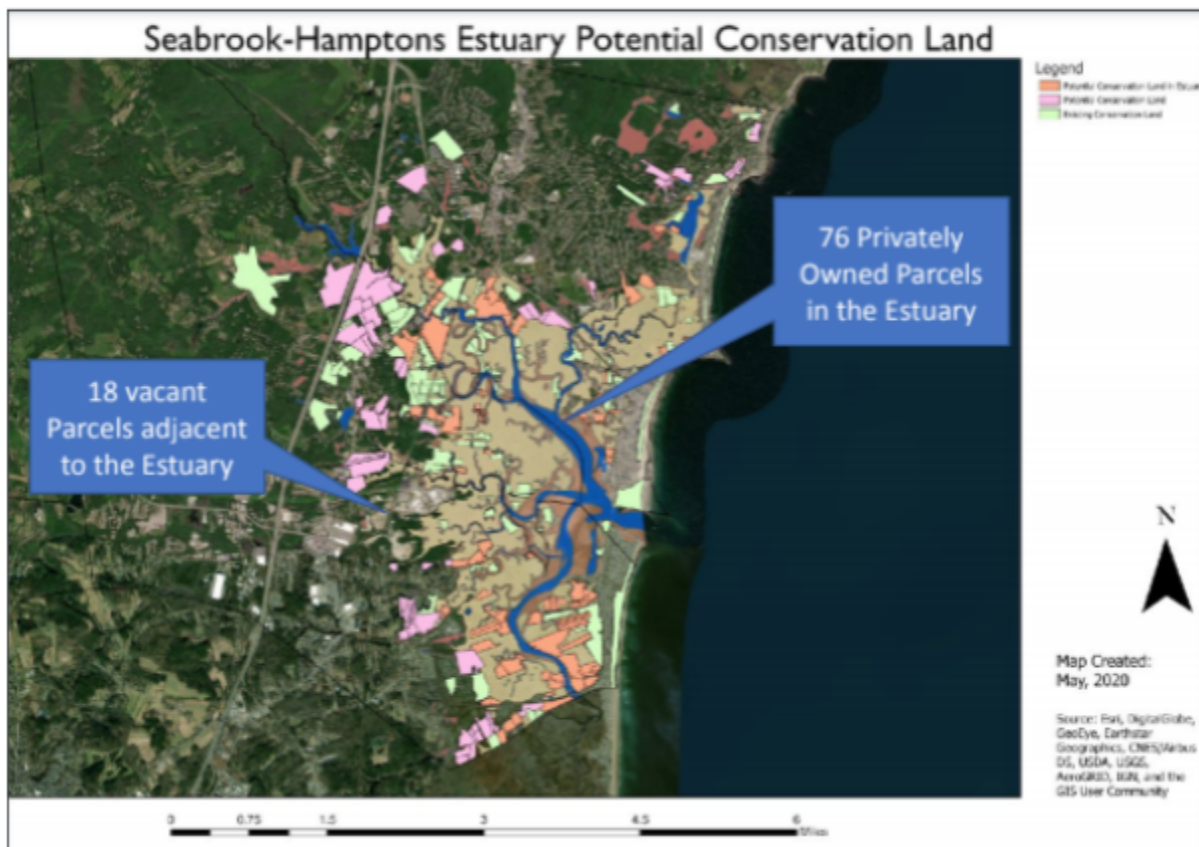
4. Opportunities for Collaboration in 2021 & 2022

The following recommendations were identified based on the survey results and webinar discussions, drafted by Roca, and refined with the steering committee's best judgement regarding the most imminent opportunities for collaboration.***

A. Salt marsh monitoring (See this overview of marsh monitoring data needs)
   a. Consider potential methods for enhanced assessment of salt marsh vegetation, including: geospatial, rapid assessment, citizen science, and plots/transects,
      i. Explore the RISMA protocol, which provides an intermediate scale view and has been implemented in Rhode Island. Contacts: Kenneth Raposa, Narragansett Bay National Estuarine Research Reserve; Wenley Ferguson, Save The Bay.
      ii. Organize a field trip/meeting to compare transect designs in Webhannet and Great Bay to assess their utility for monitoring SLR impacts. Originally, transects spanned the entire Webhannet Estuary to answer questions about how adjacent land use affected the marsh. Now they have pivoted to smaller, more discreet sections, similar to Great Bay. Pros and cons to both designs.
      iii. Advance citizen science picture post project to field verify SLAMM models. Possible opportunity for coordination between Alyson Eberhardt, Rachel Stevens, and Rayann Dionne.
      iv. Potential partners: NHDES, GBNERR, WNERR, NBNERR, SHEA, NHSG

B. Characterize sediment budgets to support restoration
   a. Convene a targeted discussion (with a smaller group) about the expansion of Surface Elevation Tables (SET) replicates. As part of this conversation, clarify objectives and parameters of expansion. Evaluate all options for maintaining marsh acreage, where more SETS are needed, and how many more are needed.
   b. Plan a field trip to assess the effectiveness of Thin-layer Placement (TLP) sites for marsh stabilization prior to sediment addition.
   c. Engage Dave Burdick (UNH) and Diane Foster (UNH) to share their project exploring washover from dunes into marshes.
   d. Potential partners: NHDES, GBNERR, SHEA, NHSG, JEL, UNH, USFWS

C. Advance the conversation on meeting water level data needs
   a. Convene a targeted discussion (with a smaller group) on how best to 1) analyze gage data and use it to calculate tidal datum, 2) support gage maintenance, 3) communicate gage results, 4) perform hydrodynamic modeling of HSE and map MHHW, and 5) deploy water level sensors (for research and model calibration).
   b. Interested parties should contact GBNERR to discuss sharing new water level monitoring instruments—novel, inexpensive, different from UNH efforts in Hampton—in HSE next year and potentially this year. Contact Chris Peter at the Great Bay National Estuarine Research Reserve if you are interested in learning more.

    c. Engage Susan Adamowicz (USFWS) to share the efforts by the Massachusetts Salt Marsh Workgroup Hydrology subcommittee to characterize the knowns, unknowns, and need to knows related to water level data needs.

    d. Potential partners: NERACOOS, NOAA, UNH, GBNERR, USFWS, NHCP

D. Advancing avian conservation and management [See this overview of related needs](#)

    a. Science & data

        i. Convene a meeting on what's being planned, what is needed, and how we can collaborate to address saltmarsh sparrow conservation needs, including current fringe marsh and future migration areas (GBNERR, ACJV/USFWS).

        ii. Collaborate to develop and use high resolution habitat data and condition indicators to map areas that the sparrows might like and identify areas where marsh could exist in the future in order to prioritize those areas for protection or restoration. Contact Mitch Hartley (ACJV/USFWS), Pam Hunt (NH Audubon), Adrienne Kovach (UNH), and Rachel Stevens (GBNERR).

        iii. Add saltmarsh sparrows to the NH Salt Marsh Plan migration model.

        iv. Secure funding for field technicians who can build on available expertise to supervise and execute existing monitoring protocols.

    b. Technical assistance

        i. Develop an evidence-based list of tips for restoration practitioners to include ways to enhance saltmarsh sparrow habitat. Increase knowledge of important submarsh habitat to avoid conflicts.

    c. Outreach

        i. Convene a discussion to explore how best to develop public messaging around sparrow conservation and other benefits provided by marshes.

    d. Potential partners: GBNERR, USFWS, UNH, NHFG, ASN, NH Audubon, NHDOT

E. Support marsh migration through projects to enhance salt marsh resilience

    a. Ditch remediation demonstration project

        i. Convene project team, recruit grant funding, identify candidate sites, conduct design and permitting for a selected site, and implement.

        ii. Initiate long term monitoring.

        iii. Communicate reasoning broadly.

    b. Leverage upcoming SLAMM rerun and previous analysis based on Coastal Viewer layers to find parcels of interest and compare them to town tax maps. Use this analysis to:

        i. Predict marsh migration pathways;

        ii. Create a land conservation plan that includes metrics to support prioritization, realistic acquisition goals, salt marsh restoration opportunities, and zoning recommendations.

    c. Potential partners: SHEA, SELT, PREP, TNC-NH, NHCP, GBNERR, GBRPP, UNH

F. Provide input and support for the development of the Hampton-Seabrook Estuary Management Plan led by SHEA

a. Ensure the management plan advisory committee has the appropriate expertise to support science-based, adaptive management of the Estuary's salt marsh habitats. If interested in joining the committee, please contact Rayann Dionne.
b. Consider developing engagement "checkpoints" during plan development so that the broader HSE Collaborative community can offer resources and ideas.
c. SHEA offers webinar to roll out the management plan when complete.
d. Develop a simple approach to aggregating and sharing links to relevant databases on PREP's website to help ensure SHEA and communities have access to data.

***Other topics of interest emerged during the webinars that are not reflected in these recommendations. These include social considerations such as equity, environmental justice, and the impacts of relocation on communities and individuals, as well as environmental issues, including fisheries, marine invasives, shellfish, and dune management.

A discussion of fisheries would require more cross-sector/program collaboration building than could be reasonably achieved in the format of the webinars in spring 2021. Social vulnerability issues were considered to be outside the scope of the survey and related discussions are already being advanced by organizations like the NH Climate Adaptation Workgroup. However, the steering committee acknowledges the significance of these issues to local communities surrounding and to partners working there, and stresses the need for further collective focus and action in this space.

5. Recommendations for Evolving the HSE Collaborative

There is a strong network of organizations with missions that support the vitality of the Hampton-Seabrook Estuary, and this was evident in the high participation rate in both the initial survey and the webinars. Operating at multiple scales in diverse sectors, many members of this network already work in partnership to address many of the threats facing the Estuary. Conversations during the webinars—which averaged 40 to 50 participants—indicated that there is interest in building out and on existing collaborations in forums like these to support them.

All respondents (13) to a final survey to assess the webinars expressed general satisfaction with the process, with most indicating they learned something new and/or identified tangible next steps they could take. About half established new connections/potential partnerships. All agreed that conversations like these should continue in the future, with nearly half agreeing that quarterly meetings would be most helpful. Nine offered to support such conversations in the future.

However, given that the potential areas of collaboration are so broad, and this was the first conversation of its kind, it was challenging to wrangle diverse issues and interests into concrete discussions over three webinars. It remains to be seen if the conversations and the resulting recommendations will indeed lead to collaborations.

- Explore the feasibility of a more formal structure for the HSE Collaborative, with articulated goals and objectives and organized teams.

- Continue to hold webinars or meetings that build on these conversations or start new ones on different projects: 2 or 4 times a year were the most popular survey choices.

- Work with state and federal partners to match management/research needs with relevant funding opportunities and develop a list of potential projects to help organize future conversations.

- Be more targeted with agendas, i.e., talk about proposal ideas for specific funding opportunities and/or invite organizations to share projects or ideas they need help building out, etc. Reference the "big idea" list from the December 2020 survey to help identify individuals to help frame and participate in discussions.

- Leverage the high level of interest in linking resources management to community resilience to design agendas that build interest and investment in the Collaborative.

- Where appropriate, look for more ways to integrate management perspectives throughout the process—many found the emphasis on science and data somewhat limited.

- Use other planned meetings and events to continue the conversations. For example, USFWS holds an ongoing salt marsh webinar series.

- Build a sense of shared ownership by engaging new individuals and different organizations in leading future conversations. Several volunteered in the post webinar survey.

- Secure funding to support coordination, and potentially, facilitation of these conversations and organization of outputs.

6. Hampton-Seabrook Estuary Collaborative Commons

The Commons is a tool that any interested organization can use to identify projects, resources, and potential partners to support science and monitoring collaborations in the HSE. It is based on topics from the webinars and survey results. It organizes existing data and science-based tools according to gaps and suggested next steps related to the topic. The Commons is intended to serve as a living resource that can be updated annually. Access the Commons here. Questions about how to update the Commons? Contact Trevor Mattera at PREP.

Hampton-Seabrook Estuary Collaborative FAQ

What is the goal?

The Hampton-Seabrook Estuary (HSE) Collaborative is a group of local, state, and federal organizations focused on aligning resources and activities to improve the long-term health and vitality of the Hampton-Seabrook Estuary (HSE) and its surrounding communities. In support of this, the Collaborative will hold three webinars in early 2021. The goal is to support participating organizations in articulating a shared vision for the estuary based on mutual goals and identifying near-term opportunities for collaboration in the spring of 2021. It is hoped this will set the stage for long-term monitoring, adaptive management, and restoration within the estuary and support the Seabrook-Hamptons Estuary Alliance's exploration of an estuary management plan.

How will it work?

With support from the US Environmental Protection Agency and the Piscataqua Region Estuaries Partnership (PREP), the HSE Collaborative has convened a steering committee with representatives from US Fish & Wildlife, New Hampshire Coastal Program, PREP, and the Seabrook-Hamptons Estuary Alliance. The committee's role is to guide a contractor in managing a webinar series and developing final products. Key milestones include the following:

- **December:** Survey of coastal and estuarine science and management programs and organizations in the region. The goal is to collect information to help the committee better understand existing science and data, needs and gaps, and future plans related to the estuary's salt marsh habitats, water quality, and fish and wildlife species.

- **January-February:** Use survey results to design three working webinars on **1/14/21, 1/28/21, & 2/17/21** from 1:00 to 2:30 pm.

- **February-April:** Based on the webinars, develop an informal framework to describe mutual objectives for the HSE, roles of participating organizations, potential for collective impact, and opportunities for investment and *specific* short-term collaborations. The framework will also include recommendations to encourage momentum and articulate a shared understanding of the group's direction and why federal agencies and others should consider further investment.

Why now?

There is a nexus of ongoing work to better understand the Estuary, maintain navigation, improve habitat health, and reduce flooding impacts. These activities would benefit from a coordinated approach that helps ensure they are mutually supportive, and if appropriate, contribute to commonly shared goals for the HSE. There is an opportunity to ensure that activities such as dredging, development, and flood prevention also support the resilience of the Estuary and its communities.

Who's involved?

This coordination effort is a coalition of interested partners whose missions, investments, and skills can contribute to a common vision for the HSE, and together can advance understanding of the estuary and its resilience. The following is a list of organizations that will be invited to participate in the webinar series. Other organizations will be consulted as appropriate.

State partners

New Hampshire Department of Environmental Services, Coastal Program
Piscataqua Region Estuaries Partnership
New Hampshire Fish and Game, Great Bay National Estuarine Research Reserve
New Hampshire Sea Grant
University of New Hampshire

Federal partners

US Fish and Wildlife, Gulf of Maine Coastal Program
NOAA Fisheries, Habitat Conservation Program
NOAA Restoration Center
NOAA Office for Coastal Management
US Army Corps of Engineers
Environmental Protection Agency

Local partners

Seabrook-Hampton Estuary Alliance
New Hampshire Audubon
Northeastern Regional Association of Coastal Ocean Observing Systems (NERACOOS)
The Nature Conservancy, New Hampshire Chapter

How can I learn more?

Please contact a member of the steering committee or the contractor supporting this project:

Steering Committee & Contractor		
Name	Affiliation	Email
Trevor Mattera	Piscataqua Region Estuaries Partnership	Trevor.Mattera@unh.edu
Christopher Meaney	Gulf of Maine Coastal Program, US Fish & Wildlife Service	christopher_meaney@fws.gov
Rayann Dionne	Seabrook Hampton Estuary Alliance	rdionne@shea4nh.org
Kevin Lucey	NH Coastal Program	kevin.p.lucey@des.nh.gov
Dolores Leonard	Roca Communications (contractor)	dolores@rocacommunications.com