

COLLABORATIVE REPORT

Learning from and Strengthening New Hampshire's Partnerships to Advance Coastal Resilience

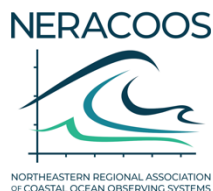
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GREAT BAY
NATIONAL
ESTUARINE
RESEARCH
RESERVE



New Hampshire
Coastal Program
DEPARTMENT OF
ENVIRONMENTAL SERVICES



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EXECUTIVE SUMMARY

New Hampshire has a history of strong partnerships and collaboration among federally funded programs focused on the coast and watershed. This partnership has been built over time and is based on mutual respect, honest dialogue, and open sharing about current and future organizational directions. The relatively limited geography of New Hampshire facilitates collaborative programming, but concerted and direct efforts to build the connections among partner organizations has been instrumental to the success in New Hampshire. Direct and frequent communication among New Hampshire's federally funded partners has resulted in deep programmatic connections and synergies that leverage each organization's unique capacities and federal resources.

This work was motivated by an interest in exploring the elements of what works in New Hampshire and areas for improvement within this system so we can continue to build on our success and share what we've learned with people working in similar settings and regions, in addition to national leadership of our organizations.

KEY LESSONS:

- **At the state level, federally funded organizations work together on coastal resilience issues by partnering in ways that leverage unique strengths/capacities**
- Collaboration among federally funded programs **requires leadership from program directors** to look beyond each organization's individual needs and focus collectively on what is best for the coastal resources and communities
- **Frequent, honest, and open communication at all levels** builds trust and relationships to foster future partnerships
- Successful partnerships take **dedicated time, energy, and resources**

KEY RECOMMENDATIONS:

- **Invest in partnerships** – Dedicating resources and time to efforts that engage multiple partners, supports networking and co-development of programming builds greater awareness and synergy across programs, avoiding duplication of efforts
- **Build around shared efforts** – Joint positions, co-managed fellowships, collaborative research, monitoring, outreach, educational programming, and other efforts leverage federal funds and foster future collaboration
- **Support collaborative culture** – Encourage, promote, and incentivize collaboration best management practices, and a positive stance toward collaboration that centers community and ecosystem health in our collective work

1. OVERVIEW – CHALLENGE AND OPPORTUNITY

New Hampshire seacoast communities will face immense challenges as they adapt to current and predicted effects of climate change. Rising sea-level and associated groundwater rise, increasing frequency and intensity of storm events and flooding, changing precipitation patterns, increasingly vulnerable coastlines that have lost natural buffering capacities of healthy ecosystems and environments to development, changing groundwater availability, and increasing pollution are a few of the challenges that must be addressed. Coastal communities will need to develop knowledge, tools, skills, perspective, and the motivation to plan for a future that sustains healthy ecosystems, economies, and people. To be successful, coastal communities will need coordinated and strategic action from a broad set of federal and state organizations.

In New Hampshire, federal-state partnerships and collaborations have been central to the state's coastal resilience efforts. Programs such as:

Great Bay National Estuarine Research Reserve (GBNERR)

NOAA/National Ocean Service and NH Department of Fish and Game
National Estuarine Research Reserve System

Piscataqua Region Estuaries Partnership (PREP)

U.S. Environmental Protection Agency and University of New Hampshire
National Estuary Program

New Hampshire Department of Environmental Services Coastal Program (NHCP)

NOAA/National Ocean Service and NH Department of Environmental Services
Coastal Zone Management Program

Northeastern Regional Association of Coastal Ocean Observing Systems (NERACOOS)

NOAA/National Ocean Service/IOOS Office
Integrated Ocean Observing System (IOOS)

New Hampshire Sea Grant (NHSG)

NOAA/Office of Oceanic and Atmospheric Research and University of New Hampshire
National Sea Grant College Program

These programs work in close partnership with each other, with state-level organizations (University of New Hampshire and other Educational and Research Institutions, NH Fish and Game and the NH Department of Environmental Services), regional planning commissions, and municipalities to address coastal resilience issues.

New Hampshire has an opportunity to document and build on the success of current partnerships to share lessons with the broader regional and national community and to become better prepared to support communities as they address climate change through effective and efficient collaboration. This report summarizes workshops held in the spring and summer of 2021 to explore the ways in which New Hampshire's federally funded organizations currently partner, and to envision how these partnerships can evolve into the future to improve their ability to effectively work together to meet New Hampshire's needs. Our hope is that the communities of New Hampshire will benefit from greater coordination, efficiency, and effectiveness among the state and federal entities, and that the lessons learned can inform similar partnerships in other states and regions.

2. PROCESS – DEVELOPING A SHARED UNDERSTANDING OF OUR WORK

New Hampshire's coastal zone is centered on estuaries that have served as a focal point for networking and collaboration. The leadership and staff from GBNERR, PREP, NHCP, NERACOOS, and NHSG have a long-established partnership built on a common set of interests and complimentary federal-state programs in New Hampshire's coastal landscape.

Even though the organizations meet regularly, this report was an opportunity to develop a broader, deeper understanding of each other's organizations and focus energy on enhancing their unique collaboration. Focusing first on sharing information, program leaders provided a snapshot of the current and future focus of their programs and particular niche of the organization (see **Appendix A**). This exercise was carried out over several meetings, and they highlighted the diversity of approaches and expertise of New Hampshire's federally funded coastal organizations and some common themes in their work, including a focus on topic areas such as climate, habitats, and water quality. Similar yet diverse tools are employed to varying degrees across organizations including education, communications and community technical assistance and engagement. All the organizations are centered around science and non-advocacy.

Staff input was solicited through survey instruments, within-organization meetings, and directly during two all-organization workshops, one virtual and one in-person. Discussions and feedback were targeted on defining the key elements of a successful partnership and how to enable and foster more partnerships in support of New Hampshire's coastal resiliency needs. Each organization identified needs and gaps to support New Hampshire's coastal resiliency and explored how their unique strengths and assets may best be deployed¹. An in-person gathering provided an opportunity to build rapport and strengthen connections, develop new ideas for partnerships, and enjoy a sense of common commitment to the health of coastal New Hampshire and its communities. During the workshop, the federally funded partners further refined the key gaps to address in order to support New Hampshire's coastal resiliency efforts. Staff also considered the unique assets each organization could contribute as partners to be sure these needs are addressed. We asked ourselves, *“Recognizing there are many important players, how can our unique federally funded organizations deploy our strengths/assets to be supportive and responsive quickly to support New Hampshire's coastal resiliency needs?”*

GUIDING QUESTION:

How can our unique federally funded organizations deploy our strengths/assets to be supportive and responsive quickly to support New Hampshire's coastal resiliency needs?

¹ It is important to recognize that although these meetings were directed at staff within the five federally funded organizations in coastal New Hampshire, there are significant collaborations already established in New Hampshire that involve a far wider group of partners: most notably, the New Hampshire Coastal Adaptation Workgroup ([CAW](#)). Working together since 2009, CAW includes over 30 organizations partnering together to support communities in NH's coastal watershed as they prepare for the impacts of extreme weather events and long-term climate change.

3. WHAT WE LEARNED – THE NH PARTNERSHIP MODEL & BEST PRACTICES

Leadership identified many factors and processes that support the NH Partnership Model. First, there is a legacy of collaboration: Federally funded programs focused on New Hampshire's coast and watersheds have a long history of working closely together. Overlap in mission and focus, along with differences in capacities, networks, funding structures and direction, and a relatively small geographical scope have naturally led to synergy through collaboration. Connections among people and coastal organizations in New Hampshire take many forms. Leadership for GBNERR, PREP, NHCP, NERACOOS, and NHSG meet regularly to support each other and to discuss opportunities and challenges. In many cases, leadership participate in a formal role within each other's organizations as members of management, policy, and strategic planning committees. Leadership also coordinates meetings and field visits from federal delegates and works together to share their federal funding requests.

Staff are deeply connected through collaborations on projects, jointly hosting students and interns, frequent informal discussions and interacting at professional meetings. All of this, combined with a shared and unifying passion and community-centered focus, placing the community's needs over individuals or organizations, drives collaborations in New Hampshire. The networked system has earned New Hampshire a reputation outside the region as a model for how federally funded programs and people can work together.

a. Example Collaborations

Leadership and staff identified a number of noteworthy collaborative efforts that have emerged as a result of the strong federal-state partnerships focused on coastal New Hampshire, including:

Delivering science and technical information together

1. Great Bay Buoy

NERACOOS, NHCP, PREP, and UNH jointly funded a full replacement of the Great Bay Buoy, continuing a nearly 20-year time series of environmental trends in the Bay. This enables us to understand how the Bay is changing and develop effective adaptation strategies, while also providing real-time data to boaters, aquaculturists, fishermen, and other users of the Bay for important navigational and operational decisions.

2. Salt Marsh Plan

NHCP and GBNERR have been working closely with academic, restoration, land protection and regional planners to develop a spatial model that assesses the current condition, vulnerability, and adaptive capacity of each of NH's salt marshes. This work will result in individual profiles that summarize scientific information and offer screening level suggestions for management, restoration and conservation actions that can help sustain that particular marsh. The marsh plan is now being used by PREP's habitat program and in PREP's State of Our Estuaries report to understand marsh condition and where restoration opportunities exist in the region.

3. NH Coastal Adaptation Workgroup – CAW

PREP, NHCP, GBNERR, NHSG and others to provide leadership and support to CAW to plan, publicize, deliver, and evaluate capacity-building workshops for coastal community leaders (local), annual NH climate summits (state), and regional (region) network exchanges with Maine Climate Change Adaptation Providers network (which includes ME Sea Grant and ME CZM staff), and other outreach and engagement efforts.

4. Coastal Landowner Technical Assistance Program

NHSG partnered with NHCP to develop and implement a program with one flood plain expert (NHCP) and one ecological expert (NHSG or UNH) present so there's a clearer delineation of the expertise each entity brings to the program. This program recently received funding to shift the program to a neighborhood scale which will engage GBNERR.

Sharing resources to hire joint staff and fellowships

5. Coastal Management Fellowships

NHCP and PREP, NHCP and NHSG, and GBNERR and NERACOOS have partnered to develop the scope and share the funding (\$7500 per year match) for two-year NOAA Coastal Management Fellows. NHSG recruits and submits/sponsors Coastal Management Fellowship applications.

6. Offshore Wind Planning Capacity

NERACOOS and NHSG are partnering to share a stakeholder engagement and marine spatial planning specialist to support the state and region's interests within the planning process to consider offshore renewable energy development. The hire is working directly with NHCP staff in this work.

b. Guidance on Specific Processes and Practices

Staff and leadership were asked to explore key elements they are seeking out in partners and the factors that motivate people to participate. Most often they suggested that they are seeking people who have the technical expertise, resources and capacity or skill to carry out the project but also the capacity to be a meaningful contributor to the project. Working with people with whom you have trust and have worked with in the past may create efficiencies, but it may narrow the people that are considered as the partnership is established and limit the generation of new ideas. Above all, staff are seeking to find partners with a passion and shared interest beyond what is established in a workplan or position description. People who are flexible, responsive, and fun to work with!

Furthermore, participants underscored that strong partnerships are built on relationships. When approached to partner, staff most often cited a general enjoyment, trust, and success of past partnerships as the reason to become involved. Staff are also more likely to get involved in projects where they see the opportunity to build off or enhance the project, and when they see that their expertise is needed. It is rare that the motivation to partner only comes when encouraged by a supervisor.

Participants identified several key conditions that must be met in order to establish a healthy partnership including:

- Understanding partner's skills or expertise, including what partners are not able to do (e.g., advocacy)
- Sharing of resources and responsibilities
- Identifying common goals and a common set of interests
- Capacity and time to develop the partnership
- Defining clear roles and expectations

By far, the most important ingredient for successful partnership is building strong relationships based on trust and mutual respect. Allocating the time to develop a solid foundation and understanding of each other's approach to their work can avoid misunderstandings later in the project. The most successful partnerships articulated shared goals and outcomes early in the process that rose above any individual organization's missions. Clearly defining roles and expectations and understanding strengths, limitations, and funding structures of participating staff and organizations is also a key element of success. Regular communication with periodic check-ins to coordinate efforts has been vitally important and an essential ingredient to success.



Fig. 1 Staff response when asked for most important element for a successful partnership

The single factor that staff identified that inhibits a productive partnership is the lack of time to invest in the partnership. Partnerships take time and energy, and many (most) people are already stretched thin. While there may be a strong desire to participate in a joint project, the sheer volume of other demands and capacity can hinder success. Limited resources have also been cited as a challenge or obstacle when trying to initiate a partnership with another organization. Partnerships have also suffered from:

- Slightly different goals, agendas, and interests
- Lack of a collaboration approach
- Initial expectations not clearly articulate, commonly shared, or not durable
- Staffing changes
- Inadequate communication or miscommunication
- Ineffective delegation of responsibility or lack of leadership
- Missing the opportunity to fully leverage the strengths of partners

c. Methods Leadership Can Use to Foster Partnerships

There are several strategies that were identified that leadership can use to further enhance and foster partnerships across New Hampshire's federally funded organizations, including:

1. Identify synergies, overlapping goals, resources available, etc.
 - Consistent, top-level coordination through formal and informal meetings helps establish a rapport and provide space to share ideas, problem-solve and strategize on a regular basis.
2. Consider a dedicated "collaboration fund" to bring together the New Hampshire community and identify key items of overlap each year and then work through how to advance them in future years.
3. Encourage and support joint staff meetings to discuss project ideas in advance of funding opportunities.
4. Empower staff to be creative and make decisions on behalf of the organization within the partnership.
5. Consider staff workload and, where possible, reduce workload or dedicate funding to create time and energy to invest in the partnership.
6. Coordinate partnerships/collaborations over a longer period of time (by federal leaders).
7. Connect with staff to learn first-hand about staff partnerships (e.g., attending events, observing meetings, reading reports, or delving into websites).
8. Exhibit strong leadership by:
 - Articulating and promoting the vision of a partnership,
 - Motivating the partners, and
 - Helping identify resources to make the partnership successful.

4. LOOKING FORWARD TO ENHANCE NEW HAMPSHIRE'S COASTAL RESILIENCE

New Hampshire's coastal communities and watershed communities face a myriad of challenges as they learn to mitigate and adapt to a changing climate. Several specific needs or gaps in New Hampshire's coastal resiliency efforts were identified, while recognizing the importance of incorporating input from other collaborative efforts as well, such as CAW. Please see **Appendix B** for a summary of the issues identified by staff.

- Municipal Technical Capacity and Data
- Salt Marsh Monitoring and Restoration
- Vision for Coastal Resilience in New Hampshire
- Diversity, Equity, Inclusion, Justice and Accessibility (DEIJA)
- Climate Resiliency Work in Upper Watershed Communities
- Deeper Community Engagement: Communication & Public Awareness
- Fostering Climate Champions
- Planning for Climate Mitigation, Adaptation and Migration
- Monitoring Impacts of Climate Change on Species and Habitats
- Implementation of the updated Coastal Conservation Plan
- Monitoring, Data and Modeling
- Supporting training of tomorrow's workforce to support coastal ecosystem and community resilience

a. Prioritizing Issue Areas and Identifying Current Work

As reflected above, there are a variety of issue areas that could benefit from additional focused effort to enhance New Hampshire's coastal resilience. Staff evaluated this list of issues based on their priority for New Hampshire and the relative attention each organization was paying to the issues (see **Appendix C**).

Five issue areas rose to the top as the most important for New Hampshire to address coastal resilience. Listed below each issue area are the organizations that indicated they had significant expertise and/or knowledge to contribute:

1. **Municipal Technical Capacity and Data**
NHCP, PREP, GBNERR, NERACOOS, and NHSG
2. **Planning for Climate Mitigation, Adaptation and Migration**
NHCP and GBNERR
3. **Implementation of the Updated Coastal Conservation Plan**
GBNERR and NHSG

4. **Salt Marsh Monitoring and Restoration**
NHCP, PREP, GBNERR, and NHSG
5. **Diversity, Equity, Inclusion, Justice and Accessibility**
NHCP, GBNERR, and NHSG

Three of the of the five high priority issue areas identified above were explored in more detail during the staff workshop (there was not sufficient time during the workshop to explore all five). Participants outlined the issues, shared current efforts, and generated ideas to leverage the synergy of the unique federal-state partnerships (**Appendix D**).

b. Challenges and Solutions to Partnering to Respond to New Hampshire's Coastal Resilience Needs

A variety of ideas were generated when considering how GBNERR, PREP, NHCP, NERACOOS, and NHSG could build off of and improve the current partnerships in response to New Hampshire's coastal resilience needs. As a starting point, the work to clarify each organization's role in this work has been important and the dialogue should continue. While each of the five federally funded organizations have similar missions and assets, they each come to the table with a unique scope, geographical focus, organizational structure, and expertise. An overview of each organization's particular strength or focus for their work on coastal resiliency is in **Appendix E**.

CHALLENGES:

There are a variety of challenges to effectively partner and these fell into two general categories:

1. **Funding and Programmatic Challenges**
 - Ability to meet state match requirements
 - Restrictions on moving money or accepting external funding, hiring people, etc.
 - Potential misalignment of federal funding opportunities with what is happening in New Hampshire
 - Geographic scope of programs may not fit with identified needs
2. **Capacity and Time Limitations**
 - To apply and manage new funds – who will lead, who will be fiscal agent, who has time to project manage and write the grant?
 - To be strategic – need to find ways to have project ideas lined up that align with a strategic vision or need.
 - To execute projects – insufficient staff who can get out in the field and do technical work, do administrative tasks, etc.
 - To foster relationships and establish new relationships as staff turn over

SOLUTIONS:

Structurally, there were several ideas generated on how the federally funded organizations could **enhance and strengthen their partnerships** and support New Hampshire's coastal resiliency efforts.

1. Strengthening Relationships

- Allocate funding for staff to participate in partnerships and build into staff workplans to increase coordination
- Continue to create shared positions, projects, and publications to make shared interests more tangible
- More informal and other engagement with staff and leadership among organizations, remaining careful not to overlap, but support CAW and other existing collaborative efforts
- Joint fund raising for partnered programs (foundations and grants)
- Create teams or communities of practice across organizations around key issue areas (e.g., tidal wetlands, habitat restoration, or DEIJA)

2. Communication and Coordination - Identifying, Sharing and Tracking Opportunities

- Develop and share a vision from leadership on coastal resilience
- Share timelines for funding opportunities, fellowships and communicate that information across organizations
- Hold an annual meeting or another forum to share organizational priorities and brainstorm new ideas
- Assess which projects are appropriate for interns, fellows, positions, or competitive funding
- Create a system for more organized future collaboration by collectively creating a project pipeline and maintaining a list of priorities to help with collaborations or multiple funding opportunities as they arise
- Utilize communication tools (Microsoft Teams, Slack, etc.).
- Establish a shared coordinator (coastal fellow?) to support collaboration and effective partnering on coastal resilience

Throughout the discussions, certain disciplines were identified where **additional capacity** could be beneficial to fill gaps.

3. Additional Staff Capacity and Skills

- Community and economic development, particularly to foster business sector interaction
- Social science, environmental literacy, and communications, for enhanced engagement, training, and community-specific work
- Technical and academic expertise (e.g., geological processes, living shorelines, ecological engineering, and social sciences)
- Data scientists and monitoring/data support staff

Several suggestions were made to **target resources** toward community efforts, education, and coordination of coastal resilience work.

4. Dedicated Funding for New Hampshire's Coastal Resilience Work

- Allocate outreach and education support to increase those components of every project
- Increase funding for local initiatives and conducting local projects
- Dedicated funds for teacher trainings and support
- Funding dedicated to applied, engaged, responsive local research, with support for extension capacity
- Dedicated resources for resilience work and to sustain and build on coordination among organizations
- Funding for management solutions for private homeowners
- Infrastructure improvements to help New Hampshire be the place people come to study changes and teach about them
- Support a Town of Hampton Resilience position
- Create and fund a Seacoast Regional Resilience Coordinator

APPENDICES

Appendix A. Sharing Among Leadership Team to Enhance Collaboration

3-5 YEAR FOCUS	CURRENT ACTIVITIES	FUTURE ACTIVITIES (Initial Ideas)	NICHE
New Hampshire Department of Environmental Services Coastal Program (NHCP) <i>Mission: Clean water, coastal habitats, community resilience</i>			
<ul style="list-style-type: none"> Habitat resilience: salt marsh monitoring, assessment, restoration Community resilience: capacity, assessment, planning & implementation 	<ul style="list-style-type: none"> Funding and technical assistance Habitat resilience: salt marsh monitoring, assessment, restoration Community resilience: capacity, assessment, planning & implementation 	<ul style="list-style-type: none"> Additional capacity (staff and funding) focused on community resilience (capacity, assessment, planning, implementation) Connecting salt marsh condition to Clean Water Act assessments 	<ul style="list-style-type: none"> Policy/Management Funding
Great Bay National Estuarine Research Reserve (GBNERR) <i>Mission: Stewardship of estuaries through research, education, management, and training</i>			
<ul style="list-style-type: none"> Building research program and working with young scientists Facilities upgrades New Coastal Training Program (CTP) Integrating science and education programs Working more with habitat side of NHFG on resiliency Expanding audiences and reach of education 	<ul style="list-style-type: none"> Marsh fieldwork and modeling; assistance with other habitats K-12 education programming Teacher training Exhibits/public programming Land protection prioritization Restoration planning for habitat related resiliency 	<ul style="list-style-type: none"> Intersection of habitat, people, and climate (e.g., NH Marsh Plan, land protection plans that incorporate climate, etc.) Be a part of practical and big picture solutions for communities (e.g., CTP) Building capacity for volunteer boards Linking our programs to lifelong stewardship of coasts (education, volunteers, internships, etc.) Advancing regional monitoring and restoration science related to resiliency (e.g., facilitate migration of marshes in NH) Diversity, Equity, Inclusion, and Justice (DEI) 	<ul style="list-style-type: none"> Hard funding Place-based Friends group Non-regulatory Strong education presence in the NH Seacoast
Piscataqua Region Estuaries Partnership (PREP) <i>Mission: Monitor, protect and restore the health of the Great Bay and Hampton-Seabrook estuaries</i>			
<ul style="list-style-type: none"> Anticipate more effort on coordinating monitoring and data delivery through Piscataqua Region Monitoring Collaborative (PRMC) Eelgrass and other habitat restoration 	<ul style="list-style-type: none"> Integration with other partner-led and supported resilience-related efforts (e.g., CAW) Piscataqua Region Environmental Planning Assessment (PREPA) and implementation grants 	<ul style="list-style-type: none"> More PREPA resilience-focused grants Water quality-related: supporting development of stormwater utilities, resilience funding in communities Habitat-related: living shoreline work and comingled oyster and eelgrass restoration 	<ul style="list-style-type: none"> Holistic watershed view: geographic and connecting natural to human Flexibility: connecting partners, convening, facilitating and

<ul style="list-style-type: none"> • Heavy technical assistance to communities with a growing focus on upper watershed communities in support of green infrastructure and resiliency 	<ul style="list-style-type: none"> • Tell the story of resilience through State of Our Estuaries (SOOE) report and other publications 		<p>different project scales</p> <ul style="list-style-type: none"> • Integrating and synthesizing: taking diverse knowledge and data, communicating that out
<p align="center">New Hampshire Sea Grant (NHSg)</p> <p align="center"><i>Mission: Support a coastal environment that sustains healthy ecosystems, economies, and people via four strategic focus areas (Healthy Coastal Ecosystems, Resilient Communities and Economies, Sustainable Fisheries and Aquaculture, Environmental Literacy and Workforce Development).</i></p>			
<ul style="list-style-type: none"> • Invest more capacity to address coastal resilience and climate adaptation • Support ecosystem health and coexistence of existing and future offshore and coastal use • Education and workforce development 	<ul style="list-style-type: none"> • Deeply invest in partnerships (e.g., CAW, other projects) • Engaged research and technical support to watersheds, communities, and landowners • Community/Citizen science • Education: K-12, environmental literacy, student engagement, workforce development, (e.g., CoastWise program) 	<ul style="list-style-type: none"> • Build on partnerships • Connect intentionally with community and economic development at UNH Extension; identify and bring in relevant technical and research expertise to NH • Support ‘bouncing forward’ and incorporation of justice and equity in our work; build on environmental literacy focus • Understand and improve social capital resilience; preparing research community to do impactful work (e.g., CoastWise) 	<ul style="list-style-type: none"> • Integrated research, extension, education, and communications • Long-term community engagement and networks (engaged, applied, multi-disciplinary teams) • Networked with broader research community and technical expertise in NH, regionally, nationally • Access to students, volunteers, fellows • Link to UNH Cooperative Extension and the UNH School of Marine Science and Ocean Engineering
<p align="center">Northeastern Regional Association of Coastal Ocean Observing Systems (NERACOOS)</p> <p align="center"><i>Mission: Produce, integrate, and communicate high quality information that helps ensure safety, economic and environmental resilience, and sustainable use of the coastal ocean.</i></p>			
<ul style="list-style-type: none"> • Connecting more with partners and initiatives across the NW Atlantic (including shared interests in resiliency) • Committing to DEI (e.g., Indigenous communities) • Diversifying our funding base 	<ul style="list-style-type: none"> • Tide gauges and inundation modeling • Understanding and responding to ocean acidification • Data for navigating changes uses and policies • Stakeholder outreach and engagement 	<ul style="list-style-type: none"> • Stronger focus on biology, ecology, and biodiversity • Purpose-built data products focused on resiliency • Tracking and communicating climate signals 	<ul style="list-style-type: none"> • Vast network of users, operators, and decisionmakers • Extensive experience in designing and evolving observing systems • Soup-to-nuts approach from engagement to delivery

Appendix B. Summary of Staff Survey to Identify Gaps Relevant to Coastal Resilience

Municipal Technical Capacity and Data

Capacity among municipalities and their technical assistance providers to design coastal resilience projects is limited. Additional assistance is needed for municipalities to compete for available funding and also to implement funded projects. Local capacity for projects is needed to provide technical knowledge, funding, and people power. Data is also needed at the municipal level to document ecosystem impacts and aid with local decision-making.

Salt Marsh Monitoring and Restoration

Salt marsh monitoring sites in Hampton Seabrook estuary are lacking and would be beneficial to develop baseline data and monitor changes. There is also a need for demonstration sites for salt marsh restoration that are monitored over time. Sites where natural migration is monitored and where migration is facilitated through upland modification are needed.

Restoration goal setting for different marshes is currently lacking. The conditions and future scenarios could be examined and evaluate. The least invasive techniques could be tested to meet those goals. The federally funded organizations could partner to help advise on salt marsh restoration in a coordinated way.

Vision for Coastal Resilience in New Hampshire

New Hampshire's coastal resiliency efforts could benefit from state- or regional-level plans that address challenges at larger scales, (e.g., transportation and infrastructure, shoreline management, and climate migration). More coordinated engagement across institutions and initiatives would also be beneficial.

Diversity, Equity, Inclusion, Justice and Accessibility (DEIJA)

There is a need to identify and connect with the socially vulnerable populations and frontline communities in our region to help them prepare for coastal resiliency. The first step would be to assess the needs and opportunities for those who are historically excluded and determine how those communities intersect with planning and conservation efforts in New Hampshire.

Climate Resiliency Work in Upper Watershed Communities

The upper watershed communities, beyond the 17 coastal New Hampshire towns, have had less attention and resources with regard to climate adaptation and resiliency. There is a desire to work more with these upper watershed communities. It was noted, however, that outreach into the upper watershed is sometimes limited based on different organizations funding restrictions.

Communication & Public Awareness

Communication of environmental issues with general citizenry was identified as an important need. Specifically, communicating about the combined impacts of riverine and sea level rise flooding together. The relationship between groundwater, shifting wetlands, riverine flooding, etc. is not well understood by the public and these hazards will become more of a threat as the climate continues to change. There could be implications for septic systems, for land use policies and local ordinances, etc. that should be anticipated and planned for.

Additional public awareness of past and current projects and awareness of how to engage would be useful. Capacity for citizens to educate, along with coastal partners, to appropriators and

elected officials clearly is needed. Enhanced engagement efforts such as an education program focused on community-specific impacts for each town would be useful. Suggestions were also made for a comprehensive public campaign around coastal resiliency and developing an art and climate program to create linkages with the art community and a sense of place.

Important to communication and outreach efforts is the need to understand current attitudes and behaviors around climate in the watershed and then monitor that as education, outreach, and citizen support efforts are conducted to measure their effectiveness.

Fostering Climate Champions

The future challenges facing New Hampshire's coastal communities require current investment in fostering and encouraging the next generation of climate champions. This could be accomplished by developing a real champions program that spans ages - starting with early education through high school and including opportunities such as internships. Programming could be created to expand into colleges and ultimately to adult and reach decision makers.

Planning for Climate Mitigation, Adaptation and Migration

Although recognized as a complex and thorny issue, there is a need to advance the conversation about how the physical landscape may change and the decisions local communities will face as a result of climate change. For example, how will towns like Hampton actually move things? Do they have open land to move people, businesses, etc. to? Is that land under a deed restriction that will prevent these activities? How do we restore lands after a buyout program? Work could begin with realtors, insurance brokers, utilities, and others to begin linking their work on climate to community planning and adaptation.

Better ways could be developed to connect this issue to people very personally. The downscaled information is still confusing for the general populations to interpret. People need to know what they can do both for adaptation options, and for mitigation options along a scale (i.e., what can I do for me, in my town, in my state, etc.). This goes for both individuals and for communities.

Monitoring Impacts of Climate Change on Species and Habitats

Research and monitoring to understand climate impacts on the habitat, cascading impacts on species or population dynamics, and how the habitats mitigate climate stressors were identified as important gaps to address. This research could help us understand how natural habitats mitigate climate impacts and if they can be utilized as green infrastructure for climate adaptation. It is also important to explore how different species will respond to different restoration options in order to assess their suitability.

Research is also needed to better understand the impact of really big climate events. We know eelgrass, oyster beds and salt marsh ecosystems are impacted by freshwater flooding and coastal storms. How do we design ways to create resiliency for both long term climate impacts like sea level rise and catastrophic events that shift habitats and alter ecosystems?

Implementation of the updated Coastal Conservation Plan

Updated in June 2021, the NH Coastal Watershed Conservation Plan² identifies key conservation areas and outlines Coastal Conservation Focus Areas that encompass conservation priorities to

² <http://www.greatbaypartnership.org/wp-content/uploads/NH-Coastal-Watershed-Conservation-Plan-20210630.pdf>

maintain ecological function and integrity to protect from habitat loss, habitat degradation, and the impacts of climate change. The Plan incorporates flood storage, salt marsh migration, and other climate considerations and is broken down town-by-town. This valuable resource could be further utilized to inform NH's resiliency efforts.

Monitoring, Data and Modeling

Several monitoring needs and data gaps were identified including:

- Water level monitoring,
- Groundwater rise modeling for unmapped communities,
- Harmful algal bloom (HAB) monitoring,
- Water quality monitoring,
- Regional coordination of habitat & biodiversity monitoring
- Data access, quality control, utilization, and use,
- Environmental data – e.g., migratory fish recruitment bottleneck, and
- Management data – e.g., performance of various BMP's.

In addition, forecasting and predictive capabilities to plan for and anticipate ecosystem disruptions such as inundation due to sea level rise and ocean acidification from rising water temperatures is needed.

Appendix C. Staff Assessment and Ranking of Issues to Address NH Coastal Resiliency

NH Coastal Resilience Gaps Identified by Partner Staff		Area where you believe your organization has most expertise/knowledge							Area where you believe your organization has most expertise/knowledge
Gap you believe is most important for NH to address coastal resilience			Coastal Program	PREP	GBNERR	NERACOOS	NH Sea Grant & Extension	Total	
Total									
14	Municipal Technical Capacity and Data		4	3	1	1	3	12	
10	Salt Marsh Monitoring and Restoration		6	1	6		2	15	
7	Vision for Coastal Resilience in New Hampshire		7				1	8	
9	Diversity, Equity, Inclusion and Justice		1		1		1	3	
7	Expand to Upper Watershed Communities		2	3	1		2	8	
8	Climate, environmental, scientific literacy within communities			2	2		3	7	
6	Communication & Public Awareness			1	1	3	4	9	
8	Fostering Climate Champions		5	1	1		2	9	
12	Planning for Climate Mitigation, Adaptation and Migration		6		2			8	
7	Monitoring Impacts of Climate Change on Species and Habitats			3	3	2	1	9	
	Understanding impacts of really big climate events		1	1			1	3	
11	Implementation of the updated Coastal Conservation Plan				4		1	5	
4	Monitoring		1	3	2	3		9	
	• Water level monitoring								
	• Groundwater rise modeling for unmapped communities								
	• HAB monitoring								
	• Water quality monitoring								
	• Regional coordination of habitat & biodiversity monitoring								
5	Data								
	• Data access, quality control, and utilization and use			2	1	3		6	
	• Environmental data - e.g., migratory fish recruitment bottleneck								
	• Management data - e.g., performance of various BMP's,								
	• Social science and economic data								
3	Planning & coordination of competing uses		2					2	
1	Forecasting and predictive capabilities (esp. inundation/sea level & acidification)					3		3	

Appendix D. Needs Identified Related to 3 of the 5 High Priority Topics

Planning for Climate Adaptation, Mitigation and Migration:

- There are several aspects of this issue, and the organizations may be under resourced to address the complexity of this issue.
- Focus should be working with planners and other who might need to better understand potential climate disruptions on communities by learning from other systems around the country and the experiences of both slow and high impact events (i.e., wildfires, hurricane Katrina). Explore how these communities are working to adapt. Work may be needed to build capacity, understand the existing data, and explore policy frameworks.
- Working with private industry and developing an aggressive outreach plan on public attitudes and behaviors is necessary. The riverine floodplain management will be increasingly important as up-watershed towns face the next housing boom and these communities need to be informed and engaged.

Salt Marsh Monitoring and Restoration:

- Monitoring needs:
 - State-wide monitoring efforts are needed, including both sentinel and pre-post restoration, data management, and technical people to do the monitoring.
 - There are opportunities both on the geospatial side (can we plan for the change analysis, put aside funding together, etc.) and the field work side.
 - Baseline monitoring and assessment of Hampton Seabrook estuary.
- Restoration needs:
 - Long-term planning to make sure we are making progress and that demonstration or pilot efforts are not isolated and are monitored long term.
 - State coordination and integration of restoration efforts across an area (Hampton Seabrook estuary for example).
 - State match for grants and more strategic thinking about how to take advantage of pots of federal money.
 - Could look at different models for pre-post restoration monitoring (consultants).
 - Expanding work to include upper watershed habitat/restoration projects.

Diversity, Equity, Inclusion, Justice and Accessibility:

- There is interest but limited capacity to adequately address this issue. No one is emerging as an expert, but the expertise is needed. This topic crosses all of our organizations and is something we are all working to address and could partner to jointly learn.
- This topic was defined in two categories:

- Internal
 - Examine hiring processes and meetings
 - Inclusion of a range of diverse viewpoints and representation
 - Examine structural reinforcement of bias and inequalities
- External
 - Examine program access/inclusion (Who are we reaching? Where are we monitoring?)
 - Examine solutions and recommendations offered to affected communities (Are there unintended consequences? How to include advisory committees?)
- Specific needs identified include:
 - Conducting a needs assessment
 - Assessing demographic changes and audience
 - Developing strategies to reach new audiences
 - Expanding efforts to upper watershed
 - Finding ways to include a diversity of view
 - Leveraging Sea Grant/Extension offices around the state
 - Integrating with community and economic development efforts
- Risk and concerns about addressing the issue were shared:
 - Mismanaging this issue is a real risk
 - Understanding what people need is critical
 - It's important to leverage people that know and have relationships
- Neighborhood Technical Assistance Program (NHCP & NHSG) example:
 - Seacoast Public Health Network as partner to help reach underserved communities
 - Climate has been in work plan for years but lacking capacity to implement
 - Mutual benefits

Appendix E. Identifying Strengths of Our Organizations as We Partner

Science and Research – **NHSG, NERACOOS, PREP, GBNERR, NHCP**

- Research program (engaged, applied, multidisciplinary teams)
- Link to UNH School of Marine Science and Ocean Engineering
- Access to researchers/extension specialists across a range of disciplines (e.g., community and economic development)
- Long term observations and models
- Data management
- Foundational estuary science

Education and Workforce Development – **GBNERR, NHSG, PREP**

- Strong K-12 education presence in seacoast
- In-house education expertise
- Graduate student involvement in projects
- Support for fellowships, internships, credit and non-credit professional development curriculum

Engagement and Outreach – **NHSG, NERACOOS, PREP**

- Focus on understanding stakeholder needs
- Organizational commitment to engagement
- Outreach experience
- Convening and facilitating partners
- Facilitation and capacity building role

Communication – **NHSG, PREP, NERACOOS**

- Communications specialist capacity
- Integrating and synthesizing diverse knowledge and data and communicating that information
- Developing and maintaining platforms for communicating complex data streams

Technical Assistance – **NHCP, NHSG, GBNERR, PREP**

- State resilience
- Community resilience
- Habitat resilience

Grant Administration and Project Management – **NHSG, NHCP, GBNERR**

- Ability to apply for and manage grants including large, federal grants
- Grant management and funding capacity
- Project management expertise

Physical Space – **GBNERR, NHG, NHCP**

- Access to facilities and space within the University of New Hampshire System, GBNERR Great Bay Discovery Center, and NHDES Pease Offices

Students, Volunteers, Interns – **NHSG, GBNERR**

- Opportunities to tap into organization's internship program to add capacity
- Access to students, volunteers, etc.
- Active Friends group

Regional Networks – **NERACOOS, GBNERR, PREP, NHSG**

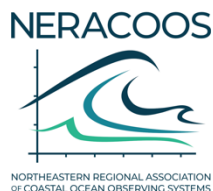
- Networked with broader research community and technical expertise in NH, regionally and nationally
- Regional-scale focus that brings experiences and insights from other locales to NH
- Vast network of users, operators, and decisionmakers
- Access to resources and expertise that exist for our network of natural resource agencies locally and a national network of Reserves (i.e., lessons learned)

State Policy / Regulatory Presence – **NHCP**

Non-political / Non-advocacy – **All**



GREAT BAY
NATIONAL
ESTUARINE
RESEARCH
RESERVE



New Hampshire
Coastal Program
DEPARTMENT OF
ENVIRONMENTAL SERVICES



PREP
Piscataqua Region Estuaries Partnership

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