Agenda • October 3, 2016 • Great Bay NERR, NH

Meeting location is the Hugh Gregg Coastal Conservation Center, 89 Depot Rd, Greenland, NH
Directions: http://greatbay.org/visit/index.htm

9:15 AM	**Arrive & Networking**
9:30 AM	**Welcome & Introductions** *Cory Riley, Great Bay NERR, Brian Thompson, CT and Betsy Nicholson, NOAA*
9:40 AM	**Updates** *Brian Thompson, CT – State Chair* **NROC Updates** ▪ Executive Committee **Partner and Audience Updates** ▪ **Partner Updates**: NERACOOS, Sea Grant Consortium, Gulf of Maine Council ▪ **Updates:** North Atlantic Landscape Conservation Cooperative, CSO ▪ **Audience updates and comments:** Meeting attendees provide updates **Announcements and Opportunities** ▪ Regional Resilience Grants ○ Status update for tracks 1 & 2 – Bruce/Jeff ○ Living shorelines decision support tool - Kathleen ○ Next Regional Resilience Grant FFO - Betsy ▪ US Climate Resilience Toolkit – Regina
10:30 AM	**Work Plan Discussion by Committee** Each committee will give an overview of their 2017-18 work plan, highlighting new activities, followed by discussion. *Please review draft work plans before the meeting.* ▪ **Coastal Hazards Resilience** ▪ **Ocean and Coastal Ecosystem Health** *NROC's role in future ocean planning will be discussed once the NE Ocean Plan is approved by the National Ocean Council in Winter 2016.*
11:40 AM	**Partner Feedback** Partners will be asked to relate their work plans and priority activities to the draft NROC plans.
12:00 PM	**Lunch** – ***Bring your own lunch***
1:15 PM 2:00 PM	**Subcommittee Check Ins** ▪ **Regional Sand Management** *Robert LaBelle and Jeff Reidenauer, BOEM; Bradley Watson, CSO; and Howard Marlowe* The RSM co-leads will provide relevant legislation, funding and agency updates, as well as next steps for the working group. ▪ **Habitat Classification and Ocean Mapping** *Rebecca Newhall, NOAA and Matt Nixon, ME* The HCOM co-leads will be asking partners for updates to their plans and needs in SeaSketch.
2:15 PM	**Project Highlight** *Julie LaBranche, Rockingham Planning Commission* Julie will present on the process and outcomes of the RPC's work with NH municipalities to implement local climate adaption projects, as part of NROC's Resilient Shorelines grant program.

2:45 PM	**The European Union and Marine Spatial Planning** Guests from the European Commission Directorate-General for Maritime Affairs and Fisheries will present a brief overview of their overseas mission to gain insight into case studies that in part address cross-boundary issues that include both geographical and political (federal-state-tribal). They are seeking to understand why NROC has been so successful. Or conversely where it might have fallen short or failed? The dialogue from this session will help inform our guests in their task to provide advice and direction to the European Union on how it might implement its own marine spatial projects. *Please come prepared to offer insights and lessons learned regarding NROC's 10 years of experience with MSP and partnership building.*
3:15 PM	**Strategy Warm-up** Co-Chairs will key up some questions for a bigger strategic conversation at the NROC winter meeting.
3:45 PM	**Closing Business/Adjourn**

Session Reference Materials

Work Plan Discussion
See draft work plans for the Coastal Hazards Resilience and Ocean and Coastal Ecosystem Health committees at the end of this packet. Please review prior to the meeting. NROC's role in future ocean planning will be discussed once the NE Ocean Plan is approved by the National Ocean Council in Winter 2016.

The European Union and Marine Spatial Planning
Background
The University of Rhode Island Coastal Resources Center (CRC) has been invited to participate in a consortium of international experts to study international best practices for cross-border Maritime Spatial Planning (MSP). This multi-year effort is being commissioned by the European Commission Directorate-General for Maritime Affairs and Fisheries and will focus on increasing the understanding of international MSP approaches, and particularly the more challenging elements of MSP such as cross-border cooperation, strong stakeholder engagement, effective governance, incorporation of ecosystem services, and sustainable financing, to drive MSP progress forward globally, meeting international and national commitments, and enhancing the likelihood of successful delivery of Blue Growth objectives.

One component of this research is to develop MSP case studies that offer the best national and regional experiences and lessons to share. The three case studies include:

1) Xiamen Marine Functional Zoning in China and its neighboring cities, including Kinmen Island of Taiwan;
2) Coral Triangle Initiative on Coral Reefs, Fisheries and Food Security (CTI-CFF); and
3) The Northeast Regional Ocean Plan and the Rhode Island Ocean SAMP.

Strategy Warm-up
Betsy and Brian will be looking for initial thoughts and discussion on the following questions, in advance of a larger strategic session at the NROC winter meeting.

- Where is the next source of funding for NROC? How financially healthy are we?
- How might the NE congressional delegation change in the next election? Does that impact NROC/create new opportunities?
- What might be some upcoming changes in state programs, how might that impact NROC?
- What should we watch out for to position ourselves for success (funding, legislation, agency or CSO initiatives)?
- How might NROC benefit from the change in Administration (opportunity to message)?
- How can federal agencies leverage their FY17 and beyond resources and programs to benefit NROC?
- What are current gaps? What's on our "wish list" for programs & resources

NROC Updates

Committee Update – Executive Committee

NROC 2017-2018 Work Plans

Committee co-chairs, with input from committee members, have drafted new 2-year work plans. Two committee plans (Coastal Hazards Resilience and Ocean and Coastal Ecosystem Health) have been reviewed by the EC and are currently out to NROC members and partners for review (see attachments). The meeting agenda includes a session for updates and overviews from committees on the new work plans, as well as time for partner feedback. NROC's role in future ocean planning will be discussed once the NE Ocean Plan is approved by the National Ocean Council in Winter 2016.

NROC/GOMC MOU

In June, NROC and the Gulf of Maine Council signed a new Memorandum of Understanding. Changes to the new MOU were minor, primarily language revisions to reflect updated mission statements, priority areas of interest, and the broad geography of the two groups.

Science Delivery Network

As a reminder, NROC has a cooperative agreement with NALCC to deliver science to key coastal partners in the Northeast. As part of the agreement, NROC has managed the Resilient Shorelines grant program. Two of the five grant projects have been completed – Warren Pinnacle's "Advancing Existing Assessment of Connecticut Marshes' Response to SLR", and the Rockingham Planning Commission's "Tides to Storms 2 – Adaptation Implementation". The EC has granted no-cost extensions to the other 3 projects, which will wrap up between October 2016 and February 2017. Project results and summaries will be available on the NROC web site as the projects are completed.

Funding Status

NROC is currently operating on funding from three sources: a cooperative agreement with FWS/NALCC; the NOAA Regional Coastal Resilience grant; and Moore Foundation and in-kind Ocean Planning funds.

FWS/NALCC funds:

- Are active through April 2017 (due to a 6-month no-cost extension)
- Remaining funds will be used to complete Resilient Shoreline grant projects, conduct workshops focused on marshes and living shorelines, and support NROC coordination.

NOAA RCRG funds:

- Are active through April 2018
- Funds will be used to support Track 1 (Coastal Inundation Forecasting) and Track 2 (Living Shorelines) activities, including development of a state-of-the-practice report, conducting a regulatory barriers workshop, hosting a series of trainings, supporting states working with their communities on shoreline planning and assessment pilot projects, and NROC coordination.

Moore Foundation and in-kind Ocean Planning funds:

- Grant ends Dec 2017
- Funds will be used to support ocean planning staff and the Northeast Ocean Data Portal.

Committee Update – Coastal Hazards Resilience

The NROC CHR Committee provided oversight related to the NROC-NALCC Resilient Shorelines grants projects, including finalizing the Living Shorelines Stacker product and informing the design of the Habitat Reporter Tool. In coordination with the OCEH Committee, a design for a new "Resilient Shorelines" website has been drafted (to go live in October 2016) to highlight information, projects, and resources related to marsh migration and living shorelines.

The Committee continued to provide support and leadership to convene the Living Shorelines Workgroup, a sub-committee of the NROC Coastal Hazards Resilience Committee. The Workgroup held a call on June 21, 2016 and provided key input and direction related to the Regional Coastal Resilience Grant awarded to NERACOOS and NROC. First, the Workgroup identified a need to better understand the full landscape of living shorelines related education and outreach planned for the region. As a result, the NROC Coordinator developed a table describing living shorelines outreach and education efforts in New England to help alleviate confusion around timeline, target audience, and general content. The Workgroup identified key regulatory and permitting challenges to inform future work sessions and provided examples that could be explored as regulatory case studies.

Committee Update – Ocean and Coastal Ecosystem Health
The committee updated its work plan to reflect planned efforts for 2017-2018

Integrated Sentinel Monitoring
EPA Region 1, NERACOOS, the University of Maine/Gulf of Maine Research Institute (GMRI) and NH DES lead the joint NROC/NERACOOS OCEH committee overseeing the implementation of an Integrated Sentinel Monitoring Network (ISMN) For Change in Northeast U.S Ocean and Coastal Ecosystems.
The major accomplishment was the release of the final ISMN Science and Implementation Plan in May, 2016. The Plan was presented, its completion celebrated, and next steps planned at an open community workshop in June.

The Plan proposes to create a regional infrastructure to support effective and coordinated ecosystem monitoring across the numerous existing observing activities. To that end, NERACOOS, with the assistance of the OCEH Committee have recently submitted a proposal for a capacity building award from the Gulf Research Program. The workshop tasked the OCEH with development/revision of the ISMN fact sheet and a proposal, or an "ask" to bring to funding agencies and or congressional staff during the budget process over the next year.

Habitat Classification and Ocean Mapping
HCOM continues to coordinate the sharing of mapping needs and plans via SeaSketch. Any changes identified by NROC member agencies will be reviewed during the fall meeting. In addition HCOM organized a small team to develop a next step for HCOM. The group has directed HCOM towards developing a community of practice around CMECS, a mapping classification system used by many of the NROC member states and federal agencies.

Marsh Resiliency
NROC is planning a Marsh Resiliency workshop for Spring 2016 to deliver the science, tools and products from Department of Interior's Hurricane Sandy Tidal Wetlands Resiliency funded projects, including NROC's resilient shoreline grants, to build off NROC's previous two workshops held in 2014 and 2015. A planning committee has been formed, including members of both OCEH and CHR committee members as well as other federal, state, and research partners.

Committee Update – Ocean Planning
As a reminder per the committee's work plan, ocean planning activities supported by NROC are currently led by the Northeast Regional Planning Body (NE RPB) as it works to complete an ocean plan by mid-2016 (www.neoceanplanning.org). Below are updates for the Sand Management Sub-Committee and general updates on regional ocean planning activities underway by the NE RPB with the support of NROC.

Sand Management Sub-Committee (co-led by USACE, BOEM and MA)
Update: At the October 2016 NROC meeting a joint presentation will be discussed updating potential advancements in work by this subcommittee. Presenters include USACE, CSO, BOEM and State of MA.

Background: The Sand Management Sub-Committee is a forum where state, tribal and federal agencies can discuss and collaborate on identifying potential sources of sand available for beach nourishment and issues associated with this use. The need for sand has been an issue for some coastal communities for years and was also discussed in the first meeting held at USACE offices in Fall of 2014. BOEM has since awarded several contracts to partner with states to investigate potential sources of sand in federal waters offshore of each coastal state. Several states are also studying sand sources within the state 3-mile limit. The March 2015 meeting of this group discussed the findings of the BOEM contractor and several relevant coastal storm damage reduction studies that are underway. An important topic is the cost of sand from offshore sites versus truck transportation of onshore sand. Once potential sand extraction areas are identified the areas will be evaluated for sensitive resources and use conflicts. Sand extraction areas will require a NEPA analysis by the lead federal agency for any identified beach nourishment projects.
The identification of offshore sand extraction sources by the BOEM investigations will be complimented by investigations within the 3 mile state waters limit. The Sand Management subcommittee has been coordinating an implementation strategy to identify state waters' sand mining areas that are shallow enough for economically viable extraction. Analysis of recent beach nourishment costs for truck delivery and estimates of regional needs will be compared to offshore sources.
The BOEM Atlantic Sand Assessment Project (ASAP) vessel has completed its survey off the Atlantic coast and is now processing data.

Partner Updates

Partner Update – NERACOOS

NERACOOS Receives New 5-year Award from the U.S. IOOS Program
The U.S. IOOS Program announced in June that NERACOOS had received a new 5-year cooperative agreement that will continue to support the production, integration, and delivery of ocean observations and forecasts in the Northeast. The funding level for the first year is $2,276,000 and the majority of those funds will be distributed among the NERACOOS operational/research partners to sustain the data collection and forecasting efforts of the program.

Save the Date -NERACOOS Annual Meeting
Be sure to mark your calendar for the NERACOOS Annual Meeting, which is scheduled for **December 7, 2016** in Portsmouth, NH. Join NERACOOS as they discuss their recent and future activities, as well as the role ocean information plays in regional resiliency.

Integrated Nutrient Observatory Development
NERACOOS and its project partners continued the deployment of automated nutrient sensors over the spring and summer. UNH deployed the Great Bay Buoy, which now carries a nitrate, phosphate and ammonium sensor. UMaine has deployed nitrate sensors at 50m on both Buoy E (Central Maine Shelf) and Buoy I (Eastern Maine Shelf). They also deployed three nitrate sensors (50m, 100m, 180m) on buoy N (Northeast Channel). UMaine will be deploying 6 nitrate sensors on Buoy M (Jordan Basin) in early October. UConn is preparing to deploy the Western Long Island Sound Buoy that will carry a nitrate, phosphate and possibly an ammonium sensor.

Northeast Coastal Acidification Network (NECAN)
NECAN has released a new program website, http://www.necan.org, which is a great resource for ocean and coastal acidification research and information. This fall NECAN will be kicking off a second webinar series. All presentations will be made available on the new website. Additionally, NOAA's Ocean Acidification Program has released a new RFP, more information can be found here.

Cape Cod Bay Wave Buoy Deployed
NERACOOS has partnered with Mass DEP, NOAA and USGS to deploy a new high-tech wave-monitoring buoy in Cape Cod Bay. The buoy will provide sea-state information in Cape Cod Bay to improve safety and efficiency of marine transportation as mariners approach or exit the Cape Cod Canal. Real-time observations from the buoy are available on several websites, including http://www.neracoos.org, the Cape Cod PORTS page, at https://cdip.ucsd.edu, and http://www.ndbc.noaa.gov/ and will eventually be available on many boating and buoy websites and apps. Please see MassDEP's Press Release for more information about this collaborative effort.

New Water Level Gage for Maine Coast
NERACOOS partnered with the USGS Maine office to support the deployment of a new water level gage at Town of Saco's pier at Camp Ellis. Both public and private property in the area is subject to significant storm damage due to waves and wind. The gauge will provide information that is not only useful for monitoring tide elevation and potential storm surge in real-time, but also the data needed to predict wave height in the area during passing storms. Real-time data from this gage are available at www.nearcoos.org and at the USGS National Water Information System.

For more information about NERACOOS and any of these projects please contact Ru Morrison (ru.morrison@neracoos.org

Partner Update – Gulf of Maine Council

Council and Working Group Meetings
A joint Council/Working Group meeting was held in June 7-8 in Fredericton, New Brunswick. As the role of GOMC evolves with changing priorities, at the meeting the Council conducted policy discussions aimed at sharing knowledge and identifying opportunities for the GOMC to add value in regards to key priorities and issues associated with the overarching theme of climate change and extreme weather events. The discussions were informed by significant challenges, gaps and needs voiced by the member agencies in relation to these issues. Session topics were: (1) *Coastal Resiliency / Vulnerability of Coastal Infrastructure to More Frequent Extreme Weather Events*, and (2) *Links Between Changing Climate, Ocean and Ecosystem Health, and Sustainability of Coastal Resources such as Sustainable Fisheries, Migratory Birds, and Wetlands.* At the conclusion of the discussions several opportunities and initiatives were identified for jurisdictions to share information and resources and which could be included in the next two-year work plans.

At the June meeting New Hampshire passed the gavel to New Brunswick which will serve as Council Chair and Secretariat for the next two years. Perry Haines will serve as Council Chair and Peter McLaughlin is the new Working Group Chair. The next joint Council/Working Group meeting is scheduled for December 2016. The Working Group will have a virtual meeting on October 19 to discuss ongoing work and develop the agenda for the December meeting.

GOMC Annual Awards
In June the GOMC hosted an awards ceremony in Fredericton, NB to honor 18 individuals and groups for their commendable work to enhance and protect the environment in the Gulf of Maine watershed. More information is available on http://www.gulfofmaine.org/2/wp-content/uploads/2015/01/2016-GOMC-Award-Winner-Bios.pdf

GOMC U.S. Science Advisor
The GOMC is drafting the process for selecting a US scientific representative as well as a draft list of candidates. This position has been vacant for some time and GOMC is seeking to identify a candidate for approval at the Council meeting in December.

Climate Network
1) The spring publication of the *Gulf of Maine Quarterly Climate Impacts and Outlook* is available and distribution of the publication has been expanding. (2) The Climate Network is creating a web-based tool for Atlantic Canada to offer improved access to Intensity / Duration / Frequency (IDF) extreme rainfall data. The draft site, www.precip.net, is currently under review. (3) During October 2015 the network hosted another successful King Tides event for the Gulf of Maine region. Photos are available at www.gulfofmaine.kingtides.net. The Climate Network is currently looking for funding opportunities to be able to conduct another King Tides event in 2017.
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State of the Gulf
The final Gulf of Maine Watershed Status Theme Paper has moved forward and is now being circulated for final peer review. The paper will be published over the next few months.

EcoSystem Indicator Partnership (ESIP)
ESIP Steering Committee and Fisheries Subcommittee are preparing to release a Fisheries Fact Sheet. This is the seventh and final of ESIP's original theme area fact sheets. The fact sheet is currently out for review by the GOMC Council and Working Group following review by the Fisheries Subcommittee, ESIP's Steering Committee, federal agencies, and the data providers. The GOMC Secretariat will be the final reviewers.

Gulfwatch Program
Blue mussel samples are being collected for the summer 2016 from across the Gulf in coordination with NOAA's MusselWatch program to collect blue mussels. Gulfwatch's plan to address emerging contaminants will address a key need identified by NOAA and resource (shellfish) agencies as a significant lack of data around the status and trends of pharmaceuticals, personal care products, and other pollutants. NOAA will fund sampling equipment and laboratory analysis. An article on the disappearance of blue mussel in the Gulf of Maine has recently been published: Cascade J. et al. 2016. *Long-term declines in an intertidal foundation species parallel shifts in community composition.* Global Change Biology (2016), doi: 10.1111/gcb.13425.

Partner Update – NE Sea Grant Consortium
Paul Anderson, Director of Maine Sea Grant, took over as Chair of the NESGC in January, 2016. The chair position rotates annually and the next Chair will be William Wise, Director of New York Sea Grant. Jonathan Pennock, formerly Director of New Hampshire Sea Grant was recently appointed as the National Sea Grant Director and is now working out of Silver Spring, Maryland.

Each of the Sea Grant programs in the Northeast Sea Grant Consortium (NESGC) completed their most recent state research competitions for the 2016-2017 period. These programs will announce their next RFP in early January of 2017 for 2018-2019 funds. While each state develops specific priorities, these projects are broadly focused in the strategic priorities of healthy coastal ecosystems, resilient communities and economies, sustainable fisheries and aquaculture, and environmental literacy and workforce development. Overall support for these projects will be well in excess of $7M and each project is expected to have significant extension and outreach elements.

In partnership with the NOAA Ocean Acidification Program Office, the NESGC ran a regional RFP on the Impacts of Ocean Acidification on Key Coastal Marine Resource Species in the Northeast with support from the NESGC

programs and the Ocean Acidification office. This RFP focused on addressing key research needs as identified by the Northeast Coastal Acidification Network (NECAN). Four projects were funded with nearly $1M awarded. Attached is a list of funded projects and a brief summary of the planned research.

The NESGC will also be considering another regional research investment for the 2018-2019 funding cycle. The Directors will discuss the focus area options at an upcoming meeting being held in conjunction with the National Sea Grant Week Conference in Newport, Rhode Island. Ideally this regional RFP will also be announced early in 2017.

The NESGC will be holding its next biennial meeting in New York in the fall of 2017.

Update – North Atlantic LCC

North Atlantic LCC Staff Transitions and fall Steering Committee Meeting

Andrew Milliken, North Atlantic LCC coordinator since its inception in 2010, will be taking a new position with the FWS Lake Champlain Fish and Wildlife Resources Office and Western New England Complex in Vermont starting on October 4. North Atlantic LCC Coastal Resilience Coordinator Megan Tyrrell has accepted a permanent position as the Research Coordinator for the Waquoit Bay National Estuarine Research Reserve in Massachusetts starting October 31.

The fall North Atlantic LCC Steering Committee meeting will be held on October 24-25, 2016 in Connecticut. The meeting will include an update on the regional conservation opportunity area effort, including preliminary regional maps of marsh migration areas.

Tidal Marsh Resilience

A one day symposium to elicit manager's needs and examine the outputs and appropriate applications of various marsh and beach modeling approaches for the Plum Island Ecosystem was held at the Parker River National Wildlife Refuge headquarters on April 11 2016. The presentations from the Great Marsh Resiliency workshop are in the North Atlantic LCC Coastal Resilience marsh workshops workspace.

Maps produced as a result of the coupled hydrodynamic/marsh equilibrium model agreement with University of South Carolina and Louisiana State University will be available for the Great Marsh ecosystem in October 2016 and posted in the North Atlantic LCC's conservation planning atlas.

Beach and Barrier Island Resilience

The effects of Hurricane Sandy on beach nesting bird habitat suitability along the New Jersey coast have been synthesized in a report by Brooke Maslo of Rutger's University. The project had the following primary goals: 1) catalogue suitable breeding habitat criteria for NJ's beach-nesting birds; 2) quantify changes in beach-nesting bird habitat resulting from Sandy; 3) evaluate the impact of anthropogenic storm recovery efforts on beach-nesting bird habitat; and 4) develop an assessment protocol to identify and prioritize for protection of new breeding habitat created by severe coastal storms. Dr. Maslo is currently working on a similar analysis for the south shore of Long Island and her project concludes in November 2016.

Aquatic Resiliency and Connectivity

The North Atlantic Aquatic Connectivity Collaborative has been busy making presentations at numerous scientific meetings and workshops on the unified protocol for assessing road stream crossings. An electronic data entry format was recently published and will hopefully replace the need for paper in the data entry process by Spring 2017. The Nature Conservancy's "refresh" of the Northeast Connectivity analysis, which now includes both dams and road/stream crossings, will be disseminated at the end of September. Work continues assessing the unique aquatic organism passage considerations for tidally influenced crossings through a contract with the University of Massachusetts, Amherst. A draft protocol is due in summer 2017.

Atlantic and Gulf Coast Resiliency Project

A synthesis of coastal resilience related resources for the Atlantic and Gulf coasts (including the Caribbean) has been produced by the Coastal Resilience Research Associate, Emily Powell. Additionally, through an extensive literature review, Dr. Powell has also assembled the thresholds to sea level rise and storm surge for 44 fish, wildlife and plant species of conservation concern. With a half meter of sea level rise, 30% of the species reviewed are expected to lose at least 50% of their population or habitat. She also synthesized this information for four habitat types: beaches/barrier islands, tidal marshes, mangroves and shellfish beds.

Coastal Hazards Resilience
Committee 2017-2018 Work Plan

The Coastal Hazards Resilience Committee is one of three NROC standing committees. This committee was established to inform and recommend to the Council how best to approach regional issues and coordinate activities related to coastal hazards in New England.

Goal:
Build hazards resilience to impacts of coastal erosion, flooding, storms, and climate change through region-wide dissemination of data, tools, and case studies, as well as fostering collaborative actions.

Need for Action:
New England coastal communities have experienced coastal storm events that have led to loss of life and major damage to homes, businesses, infrastructure and shorelines.

Coastal hazards information and tools can assist state and local officials to better plan for impacts of storms and sea level rise and implement strategies to prevent recurring future damages. Data such as detailed terrestrial contours, shallow water bathymetry, and mean high water positions are needed throughout the region to support efforts to identify potential inundation zones from storm surge, erosion and sea level rise. A companion to data is the need to develop user-friendly tools to access and analyze data and support management decisions and recommendations.

Strategies: The committee has determined two strategies for working toward its goal. During 2017-2018, the committee will:

1. Promote regional dialogue on broad-scale adaptation strategies for responding to the effects of sea-level rise.
2. Facilitate data acquisition and user-friendly tools to support planning for and responses to coastal hazards.

Strategies and activities: Each of the two strategies has specific associated activities that the committee members will implement.

Strategy CHR-1: Promote regional dialogue on broad-scale adaptation strategies for responding to the effects of sea-level rise.

Activities:
CHR-1.1 Committee communications. Co-chairs will convene regular Committee calls and organize an annual meet-up events as part of an NROC Meeting or other regional meetings or workshops. The Committee will continue to monitor membership and assess emerging needs related to coastal hazards and climate adaptation.

- Support outreach related to NROC-NALCC Resilient Shorelines projects, including outreach with Committee on RPS-ASA's data access viewer and Blue Urchin's Habitat Reporter Tool.

CHR-1.2 Organize a regional roundtable on an emerging issue related to coastal hazards assessment and management as identified by the Committee. The Committee will organize and convene a regional roundtable event that enables state and local agencies to share information, lessons learned, research needs, etc focused on an emerging issue identified by the Committee. The Committee will identify federal partner support for the event.

***CHR-1.3 Develop regional funding proposals*.** Assess opportunities to partner with other organizations on funding proposals for climate adaptation and hazards resilience related projects. The Committee has specific interest in proposals that:

- Assessment of innovative approaches to coastal hazards management and climate adaptation;
- Continue the Municipal Coastal Resilience Initiative small grants program focused on building resilience to a number of coastal hazards including sea level rise, storm surge, and erosion;
- Facilitate review of federal, state, and municipal coastal management policies and their ability to manage for climate change;
- Workshop on Regional (multi-community) Approaches for Climate Adaptation

Strategy CHR-2: Facilitate data acquisition and user-friendly tools to support planning for and responses to coastal hazards.

Activities:

CHR-2.1 Collect examples of how federal and state agencies have used StormReporter and MyCoast resources.

- Develop a fact sheet or story template to collect examples of how federal and state agencies or other Committee members and organizations have used the suite of tools supported through MyCoast, including the StormReporter, King Tides, and Habitat tools.
- Identify opportunities to share examples through newsletters and social media and highlight agency use on the MyCoast site.

CHR-2.2 Support regional efforts to advance green infrastructure and living shoreline management approaches. The Committee will maintain a Living Shorelines Group to provide input and feedback to the NOAA Regional Coastal Resilience Grant (RCRG) tasks and deliverables related to Living Shorelines. This sub-committee is organized and facilitated by MA CZM and NOAA. NROC is listed as lead for several RCRG tasks:

- Provide input and feedback to TNC leads on the development of the "State of Practice" report. (RCRG Track 2, Task 1)
- Convene regulatory workshops, bringing together state and federal regulatory agencies and technical experts to further define and clarify issues and develop solutions. (RCRG Track 2, Task 2)
- Improve understanding, capabilities, proficiency of the availability and applicability of living shoreline practices through fact sheets and a training program for state and federal managers, local community planners, local resource managers, consultants, and project designers and engineers in the Northeast. (RCRG Track 2, Task 3)
- Develop and implement community-based living shoreline planning and assessment pilot projects that incorporate modeling results from Track 1 of the project. (RCRG Track 2, Task 4)

***CHR-2.3 Leverage NERACOOS data, products, and services for coastal inundation observations and forecasting*.**

- Review data, model and map products developed through RCRG Track 1 to provide alignment with requirements for planning and assessment pilots. Specifically, monitor progress and quality of nearshore waves outputs. (RCRG Track 1)

Implementation Leads:

The following table shows the lead agency responsible for implementing each activity. While all committee member agencies are encouraged to participate in the implementation of activities, the lead agency is responsible for coordinating, monitoring, and reporting on designated activities

Strategies and Activities	Agency Lead(s)
CHR-1: Promote regional dialogue on broad-scale adaptation strategies for responding to the effects of sea-level rise.	
CHR-1.1 Committee Communications	Co-chairs (MA, CT, NOAA)
CHR-1.2 Organize a Regional Roundtable	TBD
CHR-1.3 Develop regional funding proposals	All
CHR-2: Act on data acquisition priorities and user-friendly tools needed to support planning for and responses to coastal hazards.	
CHR-2.1 MyCOAST End-user Examples	TBD
CHR-2.2 Living Shorelines Workgroup Coordination and Support for RCRG Track 2 tasks	MA, NOAA (Workgroup)
CHR-2.3 Leverage NERACOOS data, products, and services	TBD

Past Accomplishments:

Below is a summary of past accomplishments of the Coastal Hazards Resilience Committee.

- **Hazards Resilience Workshop (November 2007)** Thematic areas included determining impacts of past hazard events, learning the effects of climate change on the intensity and frequency of future events, and understanding the region's current resiliency to better gauge existing preparedness and improve future capacity. Nearly 60 stakeholders from diverse backgrounds participated in the workshop. Presenters provided important inspiration and background on issues like storm events and climate change impacts, as well as valuable opportunities and lessons learned from specific efforts to improve coastal hazards resiliency.
- **LiDAR Workshop (May 2009)** NROC and USGS sponsored a workshop to discuss regional LiDAR data needs and requirements.
- **New England LiDAR Proposal to USGS (2009)** New England states (data managers and data users) collaborated to submit a regional proposal for the USGS 'ARRA' Funding Opportunity for LiDAR acquisition. The NE states used the results of the May 2009 LiDAR workshop to inform the proposal.
- **Climate Adaptation Proposal to NOAA (September 2010)** NROC Hazards Committee Co-chairs worked with the Gulf of Maine Council's Climate Change Network to identify regional climate adaptation planning needs and submitted a successful collaborative proposal to NOAA's Climate Program Office.
- **Coastal Climate Adaptation Training (October 2010)** NROC identified the need for a regional Climate Adaptation Training for state managers. NOAA's Coastal Services Center and the Northeast States for Coordinated Air Use Management (NESCAUM) organized a training with additional support from EPA's Region 1, New England Interstate Water Pollution Control Commission, and Rhode Island Sea Grant. More than 25 state agencies and regional organizations received training on coastal climate adaptation planning.
- **Development of the StormSmart Coasts New England Network (June 2011)** State pages available for Rhode Island, Massachusetts, and New Hampshire.
- **StormSmart Coasts New England Webinar Series (September 2011 - October 2012)** NROC organized 6 webinars on topics related to impacts of coastal hazards, emergency

preparedness, community resilience, and climate adaptation as well as specific case studies or pilot projects from New England. An average of 20 to 50 state and local officials participated in each webinar.

- **Northeast LiDAR and Sea Level Rise Impacts Workshop (July 2012)** 75 federal, state and local data managers and users participated in a 2 day workshop to discuss use of high resolution LiDAR in sea level rise and inundation mapping efforts.
- **Municipal Coastal Resilience Grants Program (2012).** Six grants were made to coastal communities to assess vulnerabilities, create resilience plans, and look at options to adapt to impacts of sea level rise. The results of the Municipal Coastal Resilience Initiative Grants Program have been summarized and are made available through the Northeast Climate Change Adaptation website http://necca.stormsmart.org/.
- **Adaptation Case Studies (2012).** The Rhode Island Sea Grant Legal Program was funded to develop case studies of New England coastal communities working on adaptation. The case studies are made available through the Northeast Climate Change Adaptation website http://necca.stormsmart.org/.
- **Media Toolkit (2012).** A media toolkit was created to help climate adaptation efforts work with local media outlets. The model toolkit is made available through the Northeast Climate Change Adaptation website http://necca.stormsmart.org/.
- **Commuting Rating System Grants Program (2014).** NROC made 3 grants to coastal communities to look at opportunities to implement activities covered in FEMA's Community Rating System. The results have been summarized and are made available through the NROC website.
- **Created MyCoast interface for StormReporter and King Tide databases (2015).**

2017-2018 Committee Members:
Julia Knisel, Massachusetts Office of Coastal Zone Management (State Co-chair)
Kevin O'Brien, Connecticut Office of Long Island Sound (NERACOOS/State Co-chair)
Adrianne Harrison, NOAA (Federal Co-chair)
Patricia Bowie, Massachusetts Office of Coastal Zone Management
Steve Couture, New Hampshire Coastal Program
Stephen Dickson, Maine Geological Survey
Sherry Godlewski, New Hampshire Department of Environmental Services
Edward Fratto, Northeast States Emergency Consortium
Janet Freedman, Rhode Island Coastal Resources Management Council
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Kirsten Howard, New Hampshire Coastal Program
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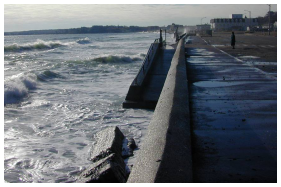
Adam Whelchel, The Nature Conservancy

Ocean and Coastal Ecosystem Health Committee
2017-2018 Work Plan



The Ocean and Coastal Ecosystem Health (OCEH) Committee is one of three Northeast Regional Ocean Council (NROC) standing committees. This committee was established to help identify and coordinate regional activities to preserve and restore ecosystem health in New England. As recommended in the National Ocean Council's (NOC) *National Ocean Policy Implementation Plan*, ecosystem health and the ability to sustain those services derived from healthy coastal ecosystems will rely heavily on an ecosystem-based management (EBM) approach. In an EBM context, NROC and the OCEH Committee believe that we have the best prospects for integrating management efforts that crosscut most if not all of the most pressing issues related to ocean and coastal ecosystem health. Further, an EBM framework automatically incorporates other national priority objectives for supporting data and science, spatial characterizations, and program integration that will foster better decisions and management that can help achieve the overarching goal of healthy and resilient coastal and ocean ecosystems.

The NROC OCEH Committee combined with the Northeast Regional Association of Coastal and Ocean Observing Systems (NERACOOS) Ecosystem Health Committee to develop an integrated, regional sentinel monitoring plan to document the effects of climate change and other stressors on northeast ocean and coastal ecosystems, and formation of a regional network to advance scientific understanding of ocean acidification and its impacts on marine-dependent industries. This coordination is essential to implement a regional monitoring network that will support an effective EBM approach and the indicators that are derived from monitoring data that will guide and chart their progress.

Goal: Enhance region-wide coordination and collaborative actions on shared ocean and coastal ecosystem health priorities including those affecting water quality, habitats, and living resources and their derived social and economic benefits.

Need for Action: The Northeastern U.S. coastal ocean is a rich and diverse place, from the near-shore sounds of southern New England to the beaches of Cape Cod, and the rocky shores and complex circulatory patterns of the Gulf of Maine.

These ecosystems have abundant resources and have supported coastal communities for generations. But these valuable ecosystems are vulnerable. The impacts of increasing human uses, including many new industrial uses, and the effects of fragmented, single-sector management are showing in degraded water quality, depleted fish stocks, and damaged habitat that have diminished our lifestyle and economy alike. Over the past several decades, the water temperature in Northeastern coastal ocean has been rising at an average rate of 04° yr-1, approximately four times the global average. Predictions from climate models project indicate that this warming rate will continue to exceed the global average in the future. The effects of warming and other pressures are widespread, often linked to common causes, as evidenced by documented "dead zones" in Long Island Sound, shifting and unbalanced natural communities and diminished fisheries in the Gulf of Maine. The New England states also have identified causal links to human activity such as development on land and use of fossil fuels with the health of our coastal waters and estuaries.

Many people, agencies, and organizations are already working to protect and restore coastal and ocean ecosystem health in the Northeastern U.S. NROC's role is to support the NOC's Implementation Plan, guided by the five themes of 1) adopting EBM; 2) improving resiliency; 3) obtaining, using and sharing the best science and data; 4) promoting efficiency and collaboration; and 5) strengthening our regional effort. These themes are well-suited to NROC's and to the OCEH Committee's construct and strategy to enhance communication and collaboration, advocate for collectively-determined priority regional actions, and help articulate a common vision for management and restoration. To implement this strategy, NROC has identified three areas of focus within coastal and ocean ecosystem health:

- Link observations to management decision-making,
- Enhance data collection, integration and dissemination, and
- Improve governance, coordination and communication.

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Strategies: The committee has identified three broad strategies for working toward its goal of protecting and restoring coastal and ocean ecosystems in the Northeast:

1. Support research and monitoring that enhances our understanding of ecosystem structure and function as related to human impacts, improves utility of social, economic and environmental indicators, and leads to effective EBM implementation
2. Strengthen regional coordination to promote efficiency and collaboration by building partnerships, sharing resources, and reducing redundancy of efforts and ensuring full public and professional participation in the decision-making process
3. Facilitate the accessibility of data and decision support tools needed to support restoration, conservation, and resiliency of coastal habitats, through coordination, technical and financial assistance.

Activities listed below are underway or in the development phase and will begin the process of implementing the strategies. While far from complete with respect to the goal of implementing an EBM framework throughout the region, many of these actions provide a start, or even a cornerstone towards achieving that goal.

Strategies and activities: Each of the strategies and activities have specific associated steps that the committee members and their partners will implement over the next two years.

Strategy OCEH-1: Support Research and Monitoring

Activities:

OCEH – 1.1 Implement "Integrated Sentinel Monitoring Plan for Ecosystem Change in Northeastern Ocean and Coastal Waters"
Lead organizations: EPA, GMRI, NERACOOS

NROC will work closely with NERACOOS and other partner organizations to implement the science and implementation plan for an integrated regional climate change sentinel monitoring network for the Northeast region (from the Canadian Maritimes to Long Island Sound). The ISMN is envisioned as a regional entity with infrastructure that will sustain an adaptive sentinel monitoring network, with five major functions: 1) provide coordination support for existing observing activities; 2) further develop, integrate, and coordinate regional capacity for data management and distribution; 3) enhance and expand current monitoring efforts by supporting needed supplemental measurements; 4) create and sustain a data management, analysis and interpretation system and communication strategy to inform researchers, managers and the public; and 5) support an integrated, ecosystem-based management framework for adaptive responses to change.

1.1.1 Update and disseminate the plan as guidance on the region's need for sentinel indicators and enhancements that can be identified in proposals for funding
NROC will host the plan on their website under "current activities" for the OCEH workgroup

1.1.2 Write letters of support to proposals that directly address sentinel monitoring needs
NROC will write letters of support for proposals which will fill sentinel monitoring data collection gaps in present monitoring activities

1.1.3 Provide guidance on collection protocols and other technical issues to promote standardization and accuracy of data and hence it's utility for broader integrated and

comparative analyses
NROC will provide a forum for discussion to agree upon data collection protocols – this could include workshops, surveys and/or formation of an expert panel. Agreed-upon standardization will be written up in the form of a guidance document for dissemination to NROC partners and the greater public.

1.1.4 Develop data management capacity and guidelines to ensure that data produced by these observing activities are conserved and entrained in integrated analysis
NROC will work closely with NERACOOS to ensure all relevant data is captured in a centralized metadata-database

1.1.5 Identify and pursue funding opportunities to implement the plan
NROC, NERACOOS, and partner organizations will coordinate to identify potential funding sources to fill gaps identified in the plan, increase spatial or temporal coverage of key sentinel sites, and increase the observing, data management, and modeling capacity of the northeast region.

OCEH – 1.2 Support Northeast Coastal Acidification Network (NECAN)
Lead Organizations: NERACOOS, EPA

NROC will work closely with NERACOOS and other partner agencies and organizations to expand the capacity of NECAN to improve our scientific understanding of ocean and coastal acidification and work with stakeholders to adapt to the effects of acidification.

1.2.1 Serve on NECAN Steering Committee to help ensure NROC interests are well represented
NROC will participate in regular steering committee conference calls, periodic meetings, technical workshops, and stakeholder outreach workshops.

1.2.2 Facilitate funding to support monitoring and research on ocean and coastal acidification
Member agencies and institution will try to identify and secure funding through relevant programs to support these activities.

1.2.3 Facilitate funding to support outreach and education to external stakeholders from ocean-dependent industries, such as the shellfish aquaculture and fishing industries
Member agencies and institution will try to identify and secure funding through relevant programs to support these activities.

Strategy OCEH-2: Strengthen Regional Coordination

Activities:

OCEH-2.1 Promote regional marsh resiliency through coordination of marsh migration modeling, monitoring and restoration techniques and their use in New England Coastal Zone Policy
Lead Organizations: EPA, NOAA, NH Coastal Program

2.1.1 Continued support of marsh migration projects in the region
Building off the 2014 NROC marsh migration project, which included a workshop and development of a guidance document through a contract, OCEH will work to distribute the guidance, implement the recommendations, and continue the dialog among practitioners. Meetings of the technical and policy community of practice around Marsh Migration will be held as needed to move forward the state of understanding of New England Marshes as sea level rises.

***2.1.2 Explore next steps* and evaluate effectiveness of projects**
Consideration and initial exploration of relevant follow-up projects will be conducted. This may

include conducting similar projects at other locations in the region using tools currently under development. As projects in the region move forward, promote measurement, monitoring and evaluation of the effectiveness of the techniques used then translate and communicate lessons learned throughout the region. Funding opportunities to support this work will be sought after by member agencies and partner institutions.

2.1.3 Integrate marsh resiliency efforts with regional road crossing and culvert assessments and aquatic connectivity projects.
Promote tidal crossing (ex. culverts) polices that incorporate assessment, design standards and construction guidelines that make systems more resilient and allow for aquatic connectivity and assist in marsh migration. In addition, NROC will promote and coordinate as appropriate projects that increase connectivity through removal of obstructions such as dams and seawalls.

OCEH-2.2: Strengthen habitat classification and ocean mapping efforts in the Northeast
Lead Organizations: NOAA, Maine Coastal Program

Coordinate with NROC Ocean Planning Committee, NROC Ocean Planning Staff/Contractors and Habitat Classification and Ocean Mapping (HCOM) subcommittee members to strengthen collaboration between and compatibility of habitat classification methods and efforts in the New England Region. The work of the Habitat Classification and Ocean Mapping Working Group will be continued through shared knowledge and regional mapping coordination to effectively meet mapping needs in New England, particularly northeast submerged lands and outer continental shelf lands.

2.2.1 Regional mapping coordination
Through the use of SeaSketch, NROC partner members will continue to share their mapping plans and needs in an effort to find opportunities to leverage resources among NROC partners working in New England. This information will be presented during NROC meetings.

2.2.2 Develop a habitat classification community of practice
Create a community for sharing techniques around habitat classification mapping using CMECS. This will include training opportunities, peer to peer learning through webinars, a listserve for sharing questions and techniques, and workshops to drive how the community will work together.

Improve ability to utilize data in different habitat classification schemes through creating crosswalks to CMECS.

Connect with efforts going on in other regions (e.g. Great Lakes Aquatic Framework) for cross regional mapping learning opportunities.

2.2.3 Identification of new resources and collaboration opportunities
HCOM members will actively seek new regional financial resource opportunities and help to facilitate partnerships and collaborations between partners with regards to Habitat Classification and Ocean Mapping initiatives in the Northeast, looking specifically at how mapping and classification can continue to support ocean planning, resiliency, and ocean and ecosystem health.

HCOM will develop standard regional language around the application of ocean data, which can be used for funding requests.

OCEH-2.3: Strengthen resilient coastal stormwater best management practices in New England
Lead Organizations: EPA, TBD

Coordinate regional efforts that are addressing the complex issue of managing stormwater in the coastal zone at the freshwater and tidal interface with additional pressures of sea level rise and the increase of extreme precipitation events

2.3.1 Provide a forum for information exchange
Facilitate a community of practice of NROC member agencies and other interested parties to discuss challenges, opportunities, design standards, BMP selection, communication/outreach and other issues of regional relevance.

2.3.2 Promote adoption of improved stormwater practices and policies, including green infrastructure
Support efforts to improve stormwater and water quality BMPs, including green infrastructure practices, to reflect enhanced understanding of climate impacts on water quality, and help institutionalize them into stormwater and water quality management programs at all levels of government.

2.3.3. Explore funding opportunities to further research, pilot projects, measurement and monitoring of coastal stormwater systems and other needs identified by the regional community of practice on this topic.
Member agencies and institution will try to identify and secure funding through relevant programs to support these activities.

OCEH – 2.4 Support Regional Ecosystem Based Management (EBM) efforts including those of the Northeast Regional Planning Body (RPB)
Lead Organizations: NROC

NROC will work closely with RPB and other partner agencies and organizations to expand the capacity of EBM practices in the region to improve our understanding of implementing EBM through existing planning and management efforts.

2.4.1. Serve on RPB EBM workgroup to help ensure NROC interests are well represented
NROC will participate in regular workgroup conference calls, periodic meetings, technical workshops, and stakeholder outreach workshops.

2.4.2 Assist with any next steps for EBM from the 2016 RPB workshops and final Northeast Ocean Plan
NROC will work with the RPB to identify any next steps appropriate for the NROC OCEH committee to take on.

2.4.3 Facilitate resources to support EBM in the region
Member agencies and institutions will try to identify and secure funding and in-kind support through relevant programs to support EBM initiatives through regional ocean and coastal planning and management efforts.

Strategy OCEH-3: Facilitate Accessibility of Data and Tools

Activities:

OCEH - 3.1 Develop a program of delivery of coastal resiliency science NROC will work with its partners and the North Atlantic LCC to develop a program to advance the application and delivery of coastal resiliency science in the Northeast Region through websites, training, workshops and grants. This activity will be a joint project of NROC's OCEH and CHR (coastal hazards resilience) committees.

3.1.1 Coordinate a program of science delivery
NROC will continue to work closely with the LCC through a project team to develop the capacity and organizational structure focused on the delivery of coastal resiliency information and tools.

3.1.2 Organize and post information and tools on ocean/coastal data portals

NROC will work with the LCC to coordinate and enhance the availability of information through existing websites and data portals including the Northeast Ocean Data Portal. The focus will be on information available through specified DOI-Hurricane Sandy projects and is likely to include: elevation and mapping data; hurricane impact assessments; assessments of the effectiveness of marsh restoration and beach management approaches; and relevant decision support tools.

3.1.3 Organize and host a workshop for information exchange and training
NROC will organize and host a workshop and training with the LCC to exchange information and inform partners about the existing and emerging coastal resilience information and tools.

3.1.4 Manage a science delivery grant program
NROC will continue to manage its science delivery grant program to advance the application of information and tools and enhance coastal resiliency science delivery networks at the state and local level. This will include the following steps: Wrapping up contracts awarded to successful applicants; and sharing and posting of results from projects and lessons learned.

Past Accomplishments: Below is a summary of accomplishments of the Ocean and Coastal Ecosystem Health Committee and its many partners during 2015-2016.

- The joint NROC/NERACOOS steering committee and three habitat working groups completed the development of an Integrated Sentinel Monitoring Strategy for Climate Change in Northeastern Ocean and Coastal Ecosystems

- NECAN completed a series of stakeholder engagement workshops throughout the region to facilitate an exchange of information with aquaculture and other impacted industries and communities. The science workgroup also published an article titled “Ocean and Coastal Acidification off New England and Nova Scotia” in *Oceanography* magazine.

- The OCEH and Coastal Hazards Resiliency (CHR) Committee planned and conducted a workshop on tidal crossings in December 2015 to coordinate New England state efforts to understand the impacts of tidal restrictions on these wetlands systems.

- A steering committee comprised of OCEH and CHR committee members developed and organized a Request for Proposals (RFP) for states or organizations to deliver the science, tools and products from Department of Interior’s Hurricane Sandy Tidal Wetlands Resiliency funded projects and selected five successful projects.

2016-2017 Steering Committee Members:

Steve Couture, NH Coastal Program (State Co-chair)
Chris Williams, NH Coastal Program (Alternate State Co-chair)
Regina Lyons, US EPA Region 1 (Federal Co-chair)
Becca Newhall, NOAA (HCOM and Alternate OCEH Federal Co-chair)
Matt Nixon, ME Coastal Program (HCOM state co-chair)
Ivy Mlsna, US EPA Region 1
Jeffrey Runge, Gulf of Maine Research Institute (NERACOOS OCEH Co-Chair)