



Gulf of Maine 2050 International Symposium

DRAFT PROGRAM SCHEDULE

NOVEMBER 4 – 8, 2019

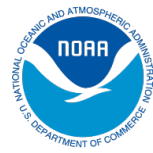
**The Westin Portland Harborview
Portland, Maine**

Special Thanks to our Sponsors and Partners

Gulf of Maine 2050 Hosts



Ocean Futurist



Leadership in Action



Many Voices Scholarships



Poster Session



Organizational Partners

Special thanks to the following organizations for providing in-kind support to help plan and coordinate Gulf of Maine 2050.

- Bay of Fundy Ecosystem Partnership
- Fisheries and Oceans Canada
- Gulf of Maine Council on the Marine Environment
- Gulf of Maine Research Institute
- Huntsman Marine Science Centre
- Maine Department of Marine Resources / Maine Coastal Program
- Massachusetts Office of Coastal Zone Management
- MIT Sea Grant
- National Oceanic and Atmospheric Administration
- New Brunswick Department of Environment and Local Government
- New Hampshire Coastal Program / New Hampshire Department of Environmental Services
- Northeastern Regional Association of Coastal and Ocean Observation Systems
- Nova Scotia Department of Intergovernmental Affairs
- Regional Association for Research on the Gulf of Maine
- US Environmental Protection Agency

Monday, November 4, 2019 | **Welcome and Setting the Stage**

The Westin Portland Harborview, 157 High Street, Portland, Maine

TIME	ACTIVITY	LOCATION
12:00 – 1:00 PM	Registration and Coffee	Eastland Grand Ballroom
1:00 – 1:15 PM	Welcome from GOM 2050 Symposium Hosts <ul style="list-style-type: none"> ➤ Andrew Pershing, Gulf of Maine Research Institute ➤ Theresa Torrent, Maine Coastal Program, Department of Marine Resources / Gulf of Maine Council 	Eastland Grand Ballroom
1:15 – 1:30 PM	Opening Speaker - The Honorable Janet T. Mills, Governor of Maine	Eastland Grand Ballroom
1:30 – 2:15 PM	Keynote Presentation <i>Ko Barrett, Vice Chair, Intergovernmental Panel on Climate Change</i> The Path to 2050: an IPCC perspective.	Eastland Grand Ballroom
2:15 – 3:00 PM	Keynote Presentation <i>Rachel Cleetus, Policy Director, Climate and Energy Program, Union of Concerned Scientists</i> Facing climate change: science, equity and solutions.	Eastland Grand Ballroom
3:00 – 3:30 PM	Coffee Break	Eastland Grand Ballroom
3:30 – 3:45 PM	Gulf of Maine 2050 – Laying the Groundwork for Collaboration <i>Rob Stephenson, Fisheries and Oceans Canada</i> Bringing diverse perspectives together to understand and adapt to changing conditions in the Gulf of Maine.	Eastland Grand Ballroom
3:45 – 4:00 PM	Gulf of Maine 2050 – Scientific Scenarios <i>Andrew Pershing, Gulf of Maine Research Institute</i> Science-based scenarios to increase understanding about how the Gulf of Maine will change over the next 30 years.	Eastland Grand Ballroom
4:00 – 4:45 PM	Celebration of the Gulf of Maine <i>Keith Ellenbogen, Underwater Photographer</i> Presentation featuring captivating underwater images of the Gulf of Maine.	Eastland Grand Ballroom
4:45 – 5:00 PM	Closing Remarks for Day 1 Symposium hosts provide closing remarks and preview of upcoming sessions.	Eastland Grand Ballroom
6:00 – 8:00 PM	Welcome Reception Fun ice-breakers with special guests – radio personalities ‘Blake and Eva’ from Portland’s Coast 93.1 FM Heavy Appetizers and Cash Bar Symposium sponsor and partner displays	Eastland Grand Ballroom

Tuesday, November 5, 2019 | **Sea Level Rise and Precipitation**

The Westin Portland Harborview, 157 High Street, Portland, Maine

TIME	ACTIVITY	LOCATION
7:30 – 8:30 AM	Registration and Continental Breakfast	Eastland Grand Ballroom
8:30 – 8:40 AM	Welcome	Eastland Grand Ballroom
8:40 – 9:00 AM	<u>Scientific Scenario:</u> Anticipated Impacts of Sea Level Rise and Precipitation on the Gulf of Maine During the Next 30 Years Lucy Chisolm, Meteorological Service of Canada, Environment and Climate Change Canada	Eastland Grand Ballroom
9:00 – 9:15 AM	Examining Climate Trends in the Gulf of Maine Region and their Impact on Riverine Flood Behavior David R. Vallee, National Oceanic and Atmospheric Administration / National Weather Service / Northeast River Forecast Center	Eastland Grand Ballroom
9:15 – 9:30 AM	Integrated Wind and Wave Stresses Reveal Long-Term Increases in Gulf of Maine Storminess Daniel L. Codiga, Massachusetts Water Resources Authority	Eastland Grand Ballroom
9:30 – 9:45 AM	Effects of Sea Level Rise on Modeled Storm Surge and Current Speeds in New Hampshire Estuaries Thomas C. Lippmann, University of New Hampshire	Eastland Grand Ballroom
9:45 – 10:00 AM	Linear and Nonlinear Responses to Northeasters Coupled with Sea Level Rise: A Tale of Two Bays Huijie Xue, University of Maine	Eastland Grand Ballroom
10:00 – 10:30 AM	Coffee Break	Eastland Grand Ballroom
10:30 – 10:45 AM	Assessing the Threat to Gulf of Maine Salt Marsh Ecosystem Services with Rising Sea Level Gail L. Chmura, McGill University	Eastland Grand Ballroom
10:45 – 11:00 AM	Comprehensive Dyke Vulnerability Assessment to Climate Change Impacts in the Bay of Fundy: Challenges and Opportunities Danika van Proosdij, Saint Mary's University, Halifax, NS	Eastland Grand Ballroom
11:00 AM – 12:00 PM	<u>Panel:</u> Promoting Coastal and Ocean Resiliency – Challenges, Current Efforts and Future Opportunities Moderator: Gayle Bowness, Gulf of Maine Research Institute ➤ Donald Killorn, Eastern Charlotte Waterways ➤ Jay Diener, Hampton Conservation Commission, New Hampshire ➤ Peter D. Phippen, Massachusetts Bays National Estuary Program ➤ Julia Knisel, Massachusetts Office of Coastal Zone Management ➤ John Walkey, GreenRoots, Chelsea, MA	Eastland Grand Ballroom
12:00 – 1:15 PM	Lunch	Prefunction Room, Ballroom & Balcony

1:15– 2:00 PM	Lightning Talks: Impacts and Adaptation Examples <ul style="list-style-type: none"> ➤ Facilitating Municipal Use of Climate Information in Adaptation Actions Vanessa R. Levesque, University of New Hampshire ➤ Case Study: Cape Cod Regional Floodplain Specialist Position Promotes Resilience Shannon Hulst Jarbeau, Woods Hole Sea Grant / Cape Cod Cooperative Extension, Barnstable County, MA ➤ Are Small Coastal Businesses Thinking About Disaster Preparedness? Anne Cox, Wells National Estuarine Research Reserve ➤ One Climate Future: Spearheading a Two-City Plan for Climate Resilience Julie Rosenbach, City of South Portland, Maine, and Troy Moon, City of Portland, Maine ➤ Undercurrents: Navigating the Human Dynamics of Climigration - An Applied Theatre Approach Cameron Wake, University of New Hampshire ➤ Community Coastal Resilience Planning and Action- Massachusetts Case Studies Amanda Kohn, Weston and Sampson ➤ Tools for Action: Addressing Sea Level Rise and its Impact on Maine Communities Sam Belknap, Island Institute 	Eastland Grand Ballroom
2:00 – 2:15 PM	Transition Time	
2:15 – 3:15 PM	Working Group - Session I Breakout groups will focus on gap analysis to determine what we are prepared for and what we are not prepared for in the context of future conditions in the Gulf of Maine	1. Hawthorne Room 2. Winslow Homer Room 3. Longfellow 4. Sara Orne Jewett 5. Rines A
3:15 – 3:30 PM	Dessert Break	
3:30 – 4:30 PM	Working Group - Session II Breakout groups will work together to identify the most important policy and management action items and research priorities going forward.	1. Hawthorne Room 2. Winslow Homer Room 3. Longfellow 4. Sara Orne Jewett 5. Rines A

4:30 – 6:00 PM	<p>Poster Session / Happy Hour with Cash Bar</p> <ul style="list-style-type: none"> ➤ Addressing critical environmental issues in the Gulf of Maine: Results of recent studies of information and communication by the Gulf of Maine Council Peter G. Wells, Dalhousie University ➤ Advances in remote monitoring of salt marshes and their application in the Plum Island Estuary, Massachusetts Amy S. Farris, US Geological Society ➤ Applying living shoreline approaches to increase resilience and reduce risk in New England Julia Knisel, Massachusetts Office of Coastal Zone Management ➤ Bay of Fundy Ecosystem Partnership: Addressing issues influencing the Bay of Fundy, Gulf of Maine Peter G. Wells, Dalhousie University ➤ Behavioral response of <i>Fundulus heteroclitus</i> to increased <i>Cryptocotyl lingua</i> parasite loading in a laboratory setting Anna Van Dreser, Colby College ➤ Building resilience by rethinking research and engagement: Lessons from conflicts over science Lindsey C. Williams, Massachusetts Institute of Technology ➤ Coastal Massachusetts StoryMap: Compilation of reports and data from the USGS-CZM Sea-floor Mapping Program Seth D. Ackerman, US Geological Survey ➤ Community coastal resilience planning and action: Massachusetts case studies Amanda Kohn, Weston and Sampson ➤ Environmental DNA (eDNA) ecosystem monitoring in the Gulf of Maine Jason S. Goldstein, Wells National Estuarine Research Reserve ➤ Facilitating municipal use of climate information in adaptation actions Vanessa R. Levesque, University of New Hampshire ➤ Going beyond relative sea level rise: New projections of coastal flood risk and companion guidance for coastal New Hampshire Cameron Wake, University of New Hampshire ➤ High-resolution surficial geology mapping of the New Hampshire inner continental shelf and coastline: An important step towards coastal resiliency Larry G. Ward, University of New Hampshire ➤ Implementation of managed realignment and salt marsh restoration to enhance resilience of dykeland communities to climate change in the Bay of Fundy Tony Bowron, CBWES Inc. 	Mezzanine & Prefunction Room
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	<ul style="list-style-type: none"> ➤ Incorporating marsh migration into traditional river and wetland restoration efforts Mike Burke, Inter-Fluve, Inc. ➤ Looking Back over 20 Years of Tidal Wetland Restoration Projects in Nova Scotia, Canada Jennie Graham, CBWES, Inc. ➤ Lunar cycle and haul-out abundance of harbor seals and gray seals at Duck Island, Maine and surrounding ledges Holly Hoag, University of New Hampshire ➤ Maine Silver Jackets High Water Mark Initiative Kevin J. Deneault, City of Portland, Maine ➤ The manifestation of resource acquisition preference of <i>Pagurus acadianus</i> in its determination of shell refuge quality Meghan Poth, Dartmouth College ➤ New geological observations of the seafloor and sub-bottom of Cape Cod Bay, Massachusetts Laura Brothers, US Geological Survey ➤ New high-resolution continuous bathymetry and topography for the southern Gulf of Maine Brian D. Andrews, US Geological Survey ➤ Next-generation monitoring and research for sustaining ecosystems and managing natural resources Peter S. Murdoch, US Geological Survey ➤ The Northeast Ocean Data Portal: Maps and data for New England Oceans Emily Shumchenia, Northeast Regional Ocean Council ➤ Preparing for offshore wind: a collaborative approach to environmental monitoring Michael Long, Commercial Fisheries Research Foundation ➤ Re-envisioning the USGS Coastal Vulnerability Index (CVI) assessment Elizabeth Pendleton, US Geological Survey ➤ Science-based ocean management in Massachusetts: A state-federal collaboration Walter Barnhardt, US Geological Survey ➤ Stonington, Maine Coastal Flood Vulnerability and Adaptation Study Leila Pike, GEI Consultants, Inc. ➤ A team approach to comprehensive resiliency and global improvement and restoration to the Great Marsh, Massachusetts Peter D. Phippen, Massachusetts Bays National Estuary Program ➤ Tools for action: Addressing sea level rise and its impact on Maine communities Sam Belknap, Island Institute 	
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	<ul style="list-style-type: none"> ➤ Undercurrents: Navigating the human dynamics of climigration, an applied theatre approach Cameron Wake, University of New Hampshire ➤ Updating coastal landscape change projections for the northeast Erika E. Lentz, US Geological Survey ➤ What are your ocean observing needs, now and into the future? Tom Shyka, Northeastern Regional Association of Coastal Observing Systems ➤ Why map the geologic substrates of the Gulf of Maine seabed? Page C. Valentine, US Geological Survey 	
Evening	Explore Portland Tuesday evening has been set aside for exploring Portland or organizing group activities.	<u>Offsite</u> Various locations

Wednesday, November 6, 2019 | Ocean Acidification

The Westin Portland Harborview, 157 High Street, Portland, Maine

TIME	ACTIVITY	LOCATION
7:30 – 8:30 AM	Continental Breakfast	Eastland Grand Ballroom
8:30 – 8:40 AM	Welcome	Eastland Grand Ballroom
8:40 – 9:00 AM	<u>Scientific Scenario: Anticipated Impacts of Ocean Acidification on the Gulf of Maine During the Next 30 Years</u> Samantha Siedlecki, University of Connecticut	Eastland Grand Ballroom
9:00 – 9:15 AM	Preliminary Results from a Study of Deepwater Ocean Acidification in Stellwagen Bank National Marine Sanctuary Benjamin Haskell, NOAA Stellwagen Bank National Marine Sanctuary	Eastland Grand Ballroom
9:15 – 9:30 AM	Empirical Models for Estimating the Carbonate System off the Northeastern US from Basic Hydrographic Data: an MLR Approach Kelly McGarry, University of Connecticut	Eastland Grand Ballroom
9:30 – 9:45 AM	Ocean Acidification and the Gulf of Maine: Advances in Attribution Science Rachel Licker, Union of Concerned Scientists	Eastland Grand Ballroom
9:45 – 10:00 AM	A Multi-Fidelity Framework and Uncertainty Quantification for Ocean Acidification in the Massachusetts and Cape Cod Bays Hessam Babaei, University of Pittsburgh	Eastland Grand Ballroom
10:00 – 10:30 AM	Coffee Break	Eastland Grand Ballroom
10:30 – 10:45 AM	Coastal Acidification Drivers in the Largest Maine Oyster Aquaculture Growing Area Kate Liberti, University of Maine	Eastland Grand Ballroom
10:45 – 11:00 AM	Effects of Sediment Buffering and Predator Exclusion on Soft-Shell Clams Sara Randall, Downeast Institute	Eastland Grand Ballroom
11:00 AM – 12:00 PM	<u>Panel: Promoting Coastal and Ocean Resiliency – Challenges, Current Efforts, and Future Opportunities</u> Panel presenters include: <ul style="list-style-type: none"> ➤ Matthew Liebman, US Environmental Protection Agency / Northeast Coastal Acidification Network ➤ Bill Mook, Mook Sea Farm ➤ Parker Gassett, University of Maine / Shell Day ➤ Zachary Gordon, University of New England; and / or Theresa Torrent, Maine Coastal Program, Maine Department of Marine Resources - Ocean to Plate to Ocean Program ➤ Ivy Frignoca, Friends of Casco Bay – Maine Coastal and Ocean Acidification Partnership 	Eastland Grand Ballroom
12:00 – 1:15 PM	Lunch	Prefunction Room, Ballroom & Balcony

1:15– 2:00 PM	Lightning Talks: Ocean Acidification <ul style="list-style-type: none"> ➤ Development of a Vulnerability Assessment for Climate Effects on the Habitats of Living Marine Resources in the Northeast US Emily Farr, NOAA Fisheries Office of Habitat Conservation ➤ Presenting the Northeast Ocean Health Index Dashboard Jamie Afflerbach, National Center for Ecological Analysis & Synthesis, University of California ➤ Collective Wisdom: Using Expert Elicitation to Inform Climate Change Resilience in the Gulf of Maine Peter H. Taylor, Waterview Consulting ➤ Kelp Farming as a Potential Strategy for Remediating Ocean Acidification and Improving Shellfish Cultivation Suzanne N. Arnold, Island Institute ➤ Inserting Science into Management: Tales from the Trenches Chad Coffin, Maine Clammers Association ➤ The Ocean Acidification Information Exchange: Using Online Communities to Affect Offline Change Julianna E. Mullen, Northeastern Regional Association of Coastal Observing Systems ➤ A Future-Looking Bi-National Integrated Ocean Observing System for the Gulf of Maine Shayla Fitzsimmons, Canadian Integrated Ocean Observing System 	Eastland Grand Ballroom
2:00 – 2:15 PM	Transition Time	
2:15 – 3:15 PM	Working Group - Session I Breakout groups will focus on gap analysis to determine what we are prepared for and what we are not prepared for in the context of future conditions related to ocean acidification in the Gulf of Maine	1. Hawthorne Room 2. Winslow Homer Room 3. Longfellow 4. Sara Orne Jewett 5. Rines A
3:15 – 3:30 PM	Dessert Break	
3:30 – 4:30 PM	Working Group - Session II Breakout groups will work together to identify the most important policy and management action items and research priorities related to ocean acidification going forward.	1. Hawthorne Room 2. Winslow Homer Room 3. Longfellow 4. Sara Orne Jewett 5. Rines A
4:30 – 6:00 PM	Poster Session / Happy Hour with Cash Bar <ul style="list-style-type: none"> ➤ Aggression and assortative mating in the Great Black-backed Gulls Brielle Michener, University of Rhode Island ➤ An analysis of fishing community resilience in Maine Joshua Stoll, University of Maine ➤ An assessment of vertical line use in Gulf of Maine fixed gear fisheries and resulting conservation benefits for the North Atlantic right whale Nathaniel J. Willse, University of Maine 	Mezzanine & Prefunction Room

	<ul style="list-style-type: none"> ➤ Bringing research to implementation Curtis Bohlen, Casco Bay Estuary Partnership ➤ Collaborative research to help assess flatfish stocks in changing oceans Tyler Pavlowich, NOAA Northeast Fisheries Science Center ➤ Comparing chemical and physical properties of prehistoric and modern samples of <i>Mya arenaria</i> in Saco Bay Danielle Jolie, University of New England ➤ Comparing independent approaches to estimate age of the Jonah Crab (<i>Cancer borealis</i>): corroborating gastric mill band counts as a direct aging method Carl Huntsberger, University of Maine ➤ Contaminants of emerging concern in the Gulf of Maine: An assessment by the NCCOS Mussel Watch Program and the Gulf of Maine Gulfwatch Program Steve Jones, University of New Hampshire ➤ Continuous monitoring for coastal acidification in Casco Bay Matthew Liebman, US Environmental Protection Agency ➤ The Debris Free Fundy project; strategies to keep marine debris out of the Bay of Fundy Jackie Walker, Huntsman Marine Science Centre ➤ Development of a vulnerability assessment for climate effects on the habitats of living marine resources in the Northeast U.S. Mike Johnson, NOAA Greater Atlantic Regional Fishery Office ➤ Distribution of emerging contaminants in Massachusetts Bay surface water and biota Captain Peter DeCola, US Coast Guard (retired) ➤ The Eastern Maine Coastal Current Collaborative: Building a regional network and research framework to support EBFM Carla Guenther, Maine Center for Coastal Fisheries ➤ Evaluating the effect of planktonic foods on larval lobster survival and performance Jessica Capista, University of Maine ➤ Exploring the effects of dam removals on zooplankton communities in the Penobscot River estuary Erin Bucci Ambrose, University of Southern Maine ➤ High collocation between sand lance and top predators in the southwestern Gulf of Maine Tammy L. Silva, NOAA Stellwagen Bank National Marine Sanctuary 	
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	<ul style="list-style-type: none"> ➤ Holding on to historic managers: providing a forum for river herring wardens in Massachusetts and using citizen science to support state management Abigail Franklin Archer, Cape Cod Cooperative Extension / Woods Hole Sea Grant ➤ Informational assessments and needs to help forecast ocean chemistry in coastal waters of the Northeast Parker Gassett, University of Maine ➤ Inserting science into management: Tales from the trenches Chad Coffin, Maine Clammers Association ➤ The Integrated Sentinel Monitoring Network (ISMN): Expansion of the Marine Biodiversity Observation Network (MBON) into the Gulf of Maine Jeffrey A. Runge, University of Maine / Gulf of Maine Research Institute ➤ Kelp farming as a potential strategy for remediating ocean acidification and improving shellfish cultivation Suzanne N. Arnold, Island Institute ➤ Maintaining the collection of long-term monitoring data on water quality, shellfish growth, and shellfish disease in Cape Cod Bay Abigail Franklin Archer, University of Massachusetts ➤ Monitoring chemical contaminants in the Gulf of Maine using sediments and mussels: an evaluation James S. Latimer, US Environmental Protection Agency ➤ Monitoring coastal carbonate chemistry in Casco Bay, Maine R. Michael Doan, Friends of Casco Bay ➤ Ocean acidification impairs the ability of American lobsters (<i>Homarus americanus</i>) to respond to food odors Benjamin C. Gutzler, University of New Hampshire ➤ The Ocean Acidification Information Exchange: Using online communities to affect offline change Julianna E. Mullen, Northeastern Regional Association of Coastal Observing Systems ➤ Ocean acidification and shell habitation in a marine hermit crab Balt von Huene for Nicholas Funnell, Dartmouth College ➤ Persistent organic pollutants and climate change: assessing global risks to marine mammals across three oceans Michelle L. Berger, Shaw Institute ➤ A predictive model for ocean and coastal acidification thresholds from Long Island Sound to the Nova Scotian Shelf J. Ruairidh Morrison, Northeastern Regional Association of Coastal Observing Systems 	
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	<ul style="list-style-type: none"> ➤ Presenting the Northeast Ocean Health Index dashboard Jamie Afflerbach, National Center for Ecological Analysis & Synthesis, University of California ➤ Public health effects of fecal indicator bacteria pollution at beaches on the Blue Hill Peninsula Mackenzie Hulme, Shaw Institute ➤ Responding to ocean and coastal acidification through a regional network J. Ruairidh Morrison, Northeastern Regional Association of Coastal Observing Systems / Northeast Coastal Acidification Network ➤ Response of soft-shell clams (<i>Mya arenaria</i>) and mud shrimp (<i>Corophium volutator</i>) to decreased and variable water column pH Samantha McGarrigle, University of New Brunswick ➤ Revisiting the prevalence of the Nemertean parasite <i>Pseudocarcinonemertes homari</i> in American lobster within the Gulf of Maine Yulibeth Velasquez-Mendoza, Universidad del Magdalena ➤ Shell game for price gain: does feeding regime make a difference to post-molt shell hardening in the American lobster? Nicole D. Orminski, University of Maine ➤ Temperature and ocean acidification changes along the 21-year GNATS transect across the Gulf of Maine William M. Balch, Bigelow Laboratory for Ocean Sciences ➤ Understanding climate change impacts in the Gulf of Maine: assessing spatial and temporal trends of water quality in Blue Hill Bay from 2004 to 2019 Mary E. Stack, Shaw Institute ➤ A video trawl survey for Atlantic Cod (<i>Gadus morhua</i>) in the Gulf of Maine Nicholas M. Calabrese, University of Massachusetts, Dartmouth 	
6:00 PM – 8:30 PM <i>Reception begins at 6:00 PM / Movie begins at 7:00 PM</i>	Movie Night: Screening of LOBSTER WAR and Reception Special screening of the documentary LOBSTER WAR and reception with David Abel, co-producer of the film and Pulitzer Prize winning environmental reporter for The Boston Globe. Reception will include finger foods and cash bar. Tickets required.	<u>Offsite</u> Portland Museum of Art 7 Congress Street Portland, ME

Thursday, November 7, 2019 | Warming Waters
The Westin Portland Harborview, 157 High Street, Portland, Maine

TIME	ACTIVITY	LOCATION
7:30 – 8:30 AM	Continental Breakfast	Eastland Grand Ballroom
8:30 – 8:40 AM	Welcome	Eastland Grand Ballroom
8:40 – 9:00 AM	<u>Scientific Scenario:</u> Anticipated Impacts of Warming Waters on the Gulf of Maine During the Next 30 years Michelle Staudinger, US Department of Interior, Northeast Climate Adaptation Science Center	Eastland Grand Ballroom
9:00 – 9:15 AM	Recovery, Range Contraction, and the Fate of Kelp Forests in the Gulf of Maine Douglas B. Rasher, Bigelow Laboratory for Ocean Sciences	Eastland Grand Ballroom
9:15 – 9:30 AM	Demographic Changes in Seabirds at Machias Seal Island Over 25 Years Heather L. Major, University of New Brunswick	Eastland Grand Ballroom
9:30 – 9:45 AM	The Role of Oceanography in the North Atlantic Right Whale Mortality Crisis and Ensuing Policy Response Kimberley Davies, University of New Brunswick	Eastland Grand Ballroom
9:45 – 10:00 AM	Vulnerabilities and Adaptation of Northeast US Fishing Communities in the Context of Shifting Species Katherine E. Mills, Gulf of Maine Research Institute	Eastland Grand Ballroom
10:00 – 10:30 AM	Coffee Break	Eastland Grand Ballroom
10:30 – 10:45 AM	Views from the Dock: Warming Waters, Adaptation, and the Future of Maine's Lobster Industry Loren McClenachan, Colby College	Eastland Grand Ballroom
10:45 – 11:00 AM	Embracing Ecosystem Change and Creating Resilience: Lessons Learned from CFRF, Lobster and Jonah Crab Research Fleet Aubrey Ellertson, Commercial Fisheries Research Foundation	Eastland Grand Ballroom
11:00 AM – 12:00 PM	<u>Panel:</u> Promoting Coastal and Ocean Resiliency – Challenges, Current Efforts and Future Opportunities Moderator: Heather Cronin, Gulf of Maine Research Institute <ul style="list-style-type: none"> ➤ Curt Brown, Ready Seafood ➤ Jonathan Taggart (green crab harvest) ➤ Andrew Lively, Cooke Aquaculture ➤ Kate Masury, Eating with the Ecosystem, Warren, RI 	Eastland Grand Ballroom
12:00 – 1:15 PM	Lunch	Prefunction Room, Ballroom & Balcony
1:15– 2:00 PM	<u>Lightning Talks:</u> Adapting to Warming Waters <ul style="list-style-type: none"> ➤ Strengthening Relationships through Coastal Environmental Baseline Data Collection: A Case Study in the Port of Saint John, New Brunswick, Canada Rachel Long, Fisheries and Oceans Canada 	Eastland Grand Ballroom

	<ul style="list-style-type: none"> ➤ Scenario Planning: A Tool to Identify Management and Science Needs in a Changing Climate – Atlantic Salmon and North Atlantic Right Whale Case Studies Diane Borggaard, NOAA Fisheries, Greater Atlantic Region ➤ Warming Waters Create Opportunity for Diversification and Collaboration: Addressing the Rise of Black Sea Base in Southern New England Thomas Heimann, Commercial Fisheries Research Foundation ➤ The New England Arctic Network Katharine A. Duderstadt, University of New Hampshire ➤ Climate Change Communication Using Strategic Framing Aimee Bonnanno, New England Aquarium ➤ Ecosystem Forecasting can be a Valuable Climate Adaptation Tool Nicholas R. Record, Bigelow Laboratory for Ocean Sciences ➤ Are Recent Declines in Whale Sightings in Midcoast Maine Related to Climate Change and Decreased Productivity? Zack Klyver, Bar Harbor Whale Watch 	
2:00 – 2:15 PM	Transition Time	
2:15 – 3:15 PM	Working Group - Session I Breakout groups will focus on gap analysis to determine what we are prepared for and what we are not prepared for in the context of future conditions related to warming waters in the Gulf of Maine	1. Hawthorne Room 2. Winslow Homer Room 3. Longfellow 4. Sara Orne Jewett 5. Rines A
3:15 – 3:30 PM	Dessert Break	
3:30 – 4:30 PM	Working Group - Session II Breakout groups will work together to identify the most important policy and management action items and research priorities related to warming waters going forward.	1. Hawthorne Room 2. Winslow Homer Room 3. Longfellow 4. Sara Orne Jewett 5. Rines A
4:30 – 6:00 PM	Poster Session / Happy Hour with Cash Bar <ul style="list-style-type: none"> ➤ 35 years of satellite-measured SST trends and 21st century climate model SST projections over the North American east coast Andrew C. Thomas, University of Maine ➤ Assessing vessel traffic threats to right whales in the Gulf of Maine: A framework for assessing risk given anthropogenic and climate factors Laura Ganley, University of Massachusetts ➤ The brighter side of climate change: How local oceanography amplified a lobster boom in the Gulf of Maine Andrew Goode, University of Maine ➤ Changes in Calanus finmarchicus size on the Northeast US Shelf Harvey Walsh, NOAA Northeast Fisheries Science Center 	Mezzanine & Prefunction Room

	<ul style="list-style-type: none"> ➤ The changing intertidal zone: invasive species influence on hard substrate communities in a fast warming climate Caroline E. Foy, Shaw Institute ➤ Changing phenology of large whales in Cape Cod Bay and its implications for management Daniel E. Pendleton, Anderson Cabot Center for Ocean Live at the New England Aquarium ➤ Climate challenges to fisheries management in a rapidly changing ecosystem Lisa Kerr, Gulf of Maine Research Institute ➤ Climate change communication using strategic framing Aimee Bonanno, New England Aquarium ➤ Comparing subsurface property fields within high resolution models of the Gulf of Maine Taylor N. Ladue, Stonehill College ➤ Do small female lobsters produce low quality eggs? Alexander James Ascher, University of Maine ➤ Dynamics of American lobster thermal habitat availability and productivity in the inshore Gulf of Maine Mackenzie D. Mazur, University of Maine ➤ Ecosystem forecasting can be a valuable climate adaptation tool Nicholas R. Record, Bigelow Laboratory for Ocean Sciences ➤ The effect of warming waters on cod in the western Gulf of Maine James Manning, NOAA Northeast Fisheries Science Center ➤ Haul out behavior of Harbor seal and Gray seal in response to wind and haul-out abundance on Duck Island, Maine Nannaphat Sirison, University of California, Berkeley ➤ How do species-specific thermal niches affect predator-prey overlap? M. Elisabeth Henderson, Stony Brook University ➤ Ichthyoplankton community structure, abundance, and diversity in the Gulf of Maine: Ongoing time-series of larval fish ingress and environmental drivers Jeremy Miller, Wells National Estuarine Research Reserve ➤ Identifying New England's "underutilized species" with a quantitative approach and assessing their availability to consumers in Boston, Massachusetts Amanda Davis, University of Massachusetts ➤ Impacts of climatically-induced environmental variabilities on egg mortality of northern shrimp (<i>Pandalus borealis</i>) in a changing Gulf of Maine Hsiao-Yun Chang, University of Maine 	
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	<ul style="list-style-type: none"> ➤ Implications of climate change to the blooms of <i>Alexandrium catenella</i> in the Gulf of Maine Andre F. Bucci, University of Maine ➤ Maintaining the Environmental Monitors on Lobster Traps and Large Trawlers Program for decades to come James Manning, NOAA Northeast Fisheries Science Center ➤ Modeling the spread of the invasive red alga <i>Dasysiphonia japonica</i> in the Gulf of Maine Brandon S. O'Brien, University of New Hampshire ➤ Modeling subsurface lagrangian pathways in a changing Gulf of Maine Kristin C. Burkholder, Stonehill College ➤ Multi-faceted temperature effects on northern shrimp in the Gulf of Maine and hypotheses for a population collapse Anne Richards, NOAA Northeast Fisheries Science Center ➤ The New England Arctic Network Katharine A. Duderstadt, University of New Hampshire ➤ Overwinter distribution and movement of adult razorbills (<i>Alca torda</i>) breeding in Atlantic Canada Mark D. Dodds, University of New Brunswick ➤ Predicting bycatch hotspots based on suitable habitat derived from fishery-independent data Jocelyn Runnebaum, The Nature Conservancy ➤ Predicting regions of North Atlantic right whale, <i>Eubaleana glacialis</i>, habitat suitability in the Gulf of Maine in 2050 Camille H. Ross, Colby College ➤ Putting recent Gulf of Maine changes into context using a 300-year reconstruction of water properties from <i>Arctica islandica</i> shells Nina M. Whitney, Iowa State University ➤ Spatiotemporal differences in Atlantic sea scallop growth in the northern Gulf of Maine and influence of environmental factors Cameron T. Hodgdon, University of Maine ➤ Student-built, fishermen-deployed, satellite-tracked drifters Erin Pelletier, Gulf of Maine Lobster Foundation ➤ U.S. fisheries and climate change: legal and management implications Susan Farady, University of New England 	
5:00 PM	<i>Deadline for Collaborative Action Grant applications</i>	<i>See website or app for online application</i>
6:00 – 8:00 PM	Evening Explorations at the Gulf of Maine Research Institute Explore a variety of hands-on learning opportunities at the Gulf of Maine Research Institute's Cohen Center for Interactive Learning while enjoying a tasting of local oysters and brews. Advance tickets required.	<u>Offsite:</u> GMRI 350 Commercial Street Portland, ME

Friday, November 8, 2019 | Closing Day – Wrap Up / Next Steps

The Westin Portland Harborview, 157 High Street, Portland, Maine

TIME	ACTIVITY	LOCATION
8:00 – 9:00 AM	Continental Breakfast	Eastland Grand Ballroom
8:45 – 9:00 AM	Welcome	Eastland Grand Ballroom
9:00 – 10:00 AM	Emerging Leaders Session Insights from students and young professionals focused on research, expanding engagement, and citizen science efforts to promote a resilient Gulf of Maine.	Eastland Grand Ballroom
10:00 – 11:45 AM	Next Steps for Promoting Resilience Gulf of Maine 2050 key findings and next steps to promote regional resilience for Gulf of Maine natural resources, communities and economy.	Eastland Grand Ballroom
11:45 AM – 12:00 PM	Wrap Up Symposium wrap up and announcement of teams receiving Collaborative Action Grants.	Eastland Grand Ballroom
12:00 PM	Symposium Closes	