NWWW BOSTON 22

NWWN National Working Waterfront Network

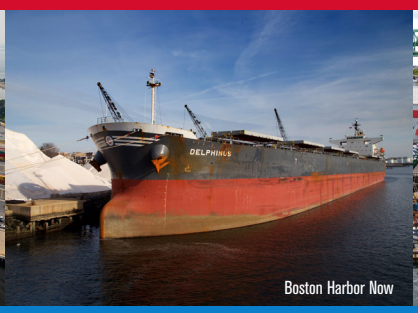

Boston Harbor Now

NATIONAL WORKING WATERFRONT NETWORK CONFERENCE

Working Waterfronts: Traditions and Transitions

In partnership with the Urban Harbors Institute of UMass Boston


Boston Harbor Now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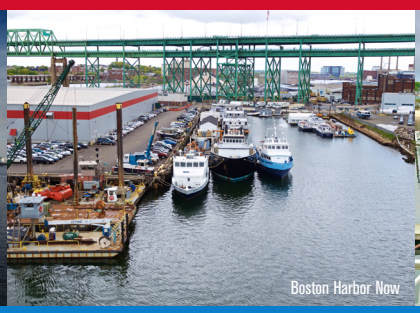
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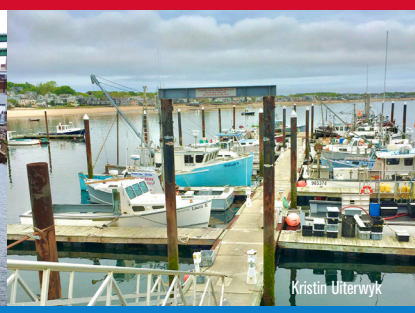
Kristin Uiterwyk

JULY 19-21, 2022 | BOSTON, MASSACHUSETTS

nationalworkingwaterfronts.com/current-conference

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NWWN Executive Committee

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Kristin Uiterwyk
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Kenneth Walker
NOAA Office for Coastal Management

Welcome to Boston and the 6th National Working Waterfront Network Conference

It is a great pleasure that we can all once again gather to celebrate the value of our national working waterfronts. Over the next three days we will come together to listen, learn and explore how we can better support this important national asset and the people who make it all happen.

What is the National Working Waterfront Network?

The National Working Waterfront Network (NWWN) is a nationwide network of businesses, industry associations, nonprofits, local governments and communities, state and federal agencies, universities, Sea Grant programs, and individuals dedicated to supporting, preserving, and enhancing our nation's working waterfronts and waterways. Our mission is to increase the capacity of coastal communities and stakeholders to make informed decisions, balance diverse uses, ensure access, and plan for the future of their working waterfronts and waterways.

Why have the conference in Boston?

In 2007 the first Working Waterfronts and Waterways Symposium took place in Norfolk, VA. Three years later in 2010, Portland, Maine hosted the second Working Waterfronts and Waterways Symposium. Since then, the conference has been in Tacoma, Washington, Tampa, Florida, and Grand Rapids, Michigan. Each time we explore the nuances of working waterfronts in that region. After 12 years it's time to return to the northeast and explore so many important working waterfront issues confronting this region as well as the nation.

How you can be involved!

We are a community of practice, that is, a forum for people who share an interest in working waterfronts and are engaged in supporting the continued economic, cultural and recreational contributions they provide for communities, regions, and the nation. As a community of practice, the NWWN considers all participants as members with opportunities to interact, share experiences, and advance knowledge, thereby increasing general awareness and enabling more informed decision making on all matters that impact the future of working waterfronts. NWWN is looking for new advisory committee members and volunteers. Are you interested? If so, please find the NWWN table at the conference and sign up. We would be happy to have you join us! You can also stay engaged by joining our NWWN listserv.

Thanks to those who made this possible!

A huge thank you goes out to everyone who has worked so hard to make this conference a reality. Without the support of our sponsors none of this would be possible. Thank you to our Conference Committee members who have put in endless hours to make this happen. And finally, a special warm thanks to Kristin Uiterwyk and Shannon Hogan at the Urban Harbors Institute for hosting the event.

Sincerely,

Nicole Faghin
Chair, National Working Waterfront Network

About the Host

URBAN HARBORS INSTITUTE

Founded in 1989, the Urban Harbors Institute (UHI), an applied research institute within the School for the Environment at the University of Massachusetts Boston, advances ocean and coastal management through collaborative research and planning at the local, regional, state, federal, and international level. Working closely with governments, marine industry representatives, non-governmental organizations, and members of the public, UHI addresses issues confronting coastal communities, and marine-based industries. Additionally, UHI's position within the University of Massachusetts Boston allows the Institute to draw from the legal, economic, policy, and scientific expertise within the University, and provides opportunities to engage students in applied research.

Thank You to Conference Sponsors

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Alexa Brickett
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Hannah Robbins
Maine Sea Grant

ACKNOWLEDGEMENTS

The NWWN would also like to thank Elyse Larsen and Jeffrey Brodeur for their commitment to the NWWN. We are grateful for their expertise, their dedication, and their willingness to go the extra mile for the Network. We wish them luck on their next adventures. We would also like to thank Saphier Events for all of their hard work and support to make this conference come to fruition.

General Information

The conference will take place on UMass Boston's campus primarily at the Campus Center. Lodging locations for attendees include the UMass Boston dormitory and DoubleTree Hotel. Shuttles will be running from both locations to the Campus Center at various intervals throughout the day. A campus map is available on the next page.

CONFERENCE REGISTRATION

Staff will be available on the 3rd floor of the UMass Boston Campus Center and Wheatley Hall to assist participants with check-in and conference information during the following times. Please be sure to pick up your name badge and conference swag along with your materials.

- Monday, July 18, 1:00 PM - 4:00 PM
- Tuesday, July 19, 7:45 AM - 5:00 PM
- Wednesday, July 20, 7:45 AM - 5:00 PM
- Thursday, July 21, 7:45 AM - 1:00 PM

INTERNET ACCESS

UMass Boston Wifi Access

Visitors to UMass Boston can access the internet via the UMass Boston Event_Guest wireless network.

Password: Enjoy2022Event!

Those from academic institutions may log on to the "eduroam" network with their .edu email and password.

SOCIAL MEDIA

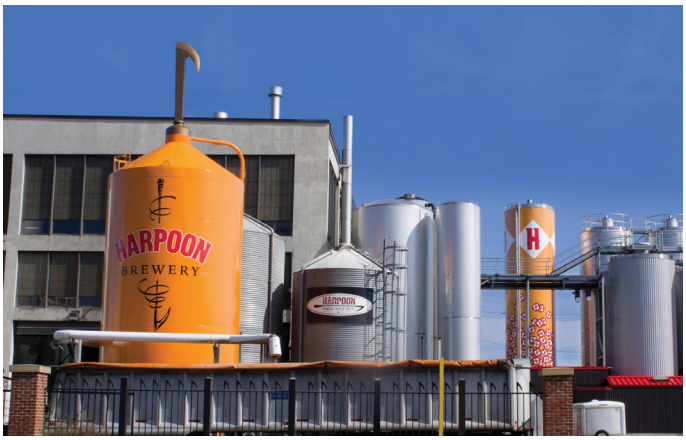
Twitter: @nwwnet #nwwn2022

UMASS BOSTON SHUTTLE BUSES

Those staying at the DoubleTree Hotel or parking in the Bayside lot adjacent to the DoubleTree Hotel can take a Route 1 and/or Route 3 UMass Boston shuttle bus to the Campus Center. The shuttle buses leave from the Mt. Vernon Street entrance to the Bayside lot and run regularly from 5:30 AM to 11:30 PM. Those at this location can also walk to the Campus Center in approximately 20 minutes. Both the bus and walking will take 10-20 minutes of travel so please plan accordingly.

UMass Boston Campus Map

Networking Events



HARPOON BREWERY PRE-CONFERENCE EVENING RECEPTION

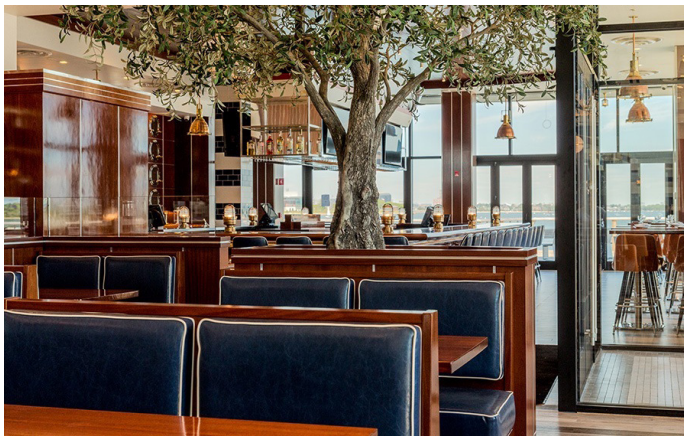
MONDAY, JULY 18, FROM 6-9 PM

Located in Boston Seaport District, 306 Northern Ave, Boston

Join us in the Seaport District for a pre-conference network event! For those arriving Monday July 18th, the National Working Waterfront Network is hosting a casual reception at Harpoon Brewery; one of Boston's original and most popular breweries situated along the working waterfront.

The event will begin at 6:00 p.m. with unlimited soft pretzels and a huge selection of local beers. Other non-beer and non-alcoholic beverages will be offered. Pre-registration is required and guest passes are available for purchase on the conference registration page.

Transportation will not be provided but Harpoon is easily accessible by public transportation. For those interested in taking the T, a group will be departing from the JFK/UMass Boston stop (Red Line) at 5:30 PM. Take the Red Line to South Station and transfer to Silver Line 2. The Silver Line 2 stops at Harbor Street, directly across from Harpoon Brewery.



NWWN EVENING WELCOME RECEPTION AT REELHOUSE ON MARINA BAY

TUESDAY, JULY 19, FROM 6-9 PM

Located in Meriel Marina Bay, 552 Victory Rd, Quincy

Join us on the waterfront in Quincy for an evening of hors d'oeuvres, networking, and fun! We are excited to open the 6th National Working Waterfront Network Conference in one of Massachusetts' oldest settlements situated along the coastline. With views of downtown Boston, the ReelHouse is a waterfront dining destination located in Marina Bay, the largest marina in the Northeast.

The reception will begin at 6:00 p.m. and open with a welcome from the NWWN Chair. Hors d'oeuvres will be available to enjoy throughout your time at the ReelHouse. Each guest will receive two drink tokens, each one for a complimentary wine and/or beer. Refreshments will also be available to purchase after use of drink tokens.

This reception is included in the full-conference and one-day registrations. If you'd like to bring a guest, please purchase a guest pass on the conference registration page.

Conference Field Trips

As part of the conference, attendees have the option to take part in one of the half-day field trips happening on Wednesday, July 20. Prior to the conference on Monday, July 18, full-day field trips will take place at select locations along the Massachusetts' coast. Full-day field trips require pre-registration.

For all field trips, please wear closed toed, comfortable walking shoes, and dress appropriately for the weather. Water and soda will be available on the bus, but we recommend bringing a water bottle to carry with you. Closer to the conference, more detailed information will be shared with field trip attendees. For any questions or concerns about field trips please contact NWWN2022@gmail.com.

Pre-Conference Full-Day Field Trips

MONDAY, JULY 18

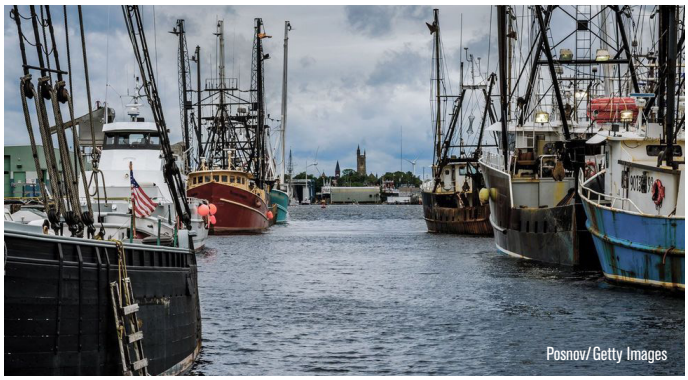
Pre-conference full-day field trips will be held on July 18, 2022. These trips will provide attendees the opportunity to visit Massachusetts' major working waterfronts from the North Shore, to the South Coast, to the northernmost tip of Cape Cod. Each is unique, rich in maritime history, and provides a great example of working waterfronts. Note: These field trips are in addition to the conference and require pre-registration.

A Day in Provincetown

Provincetown, located at the eastern tip of Cape Cod, Massachusetts, encompasses over 30 miles of beaches, including a portion of the Cape Cod National Seashore. An area long-used by Indigenous people, Provincetown was the Pilgrims' first landing site in 1620, and was home to a prominent whaling and fishing community during the 18th and early 19th century. Once known as one of the largest art communities in the country, Provincetown remains an artists' haven with past and current art displayed in galleries and museums throughout town . The trip will include a scenic 90-minute (each way) ferry ride to and from downtown Boston. In town, the tour will begin at MacMillian Pier located in Provincetown's natural deep harbor. Participants will meet with the Public Pier Corporation and then the Provincetown Marina. Participants will have the opportunity to walk around downtown and grab lunch on their own. Following lunch, participants will hear from the Center for Coastal Studies about its history and current research initiatives.

Speakers from: Provincetown Public Pier Corporation, Provincetown Marina, Center for Coastal Studies

Visit to New Bedford, Whaling City and Major Fishing Port of America


Posnov/Getty Images

Located in southeast Massachusetts, along the scenic shores of Buzzards Bay, New Bedford was once a famous whaling port and the wealthiest city in North America. Today, the city continues to earn its living from the sea, generating over $10 billion in economic value each year. It has been America's #1 fishing port in terms of the value of seafood landed for 20 consecutive years. This field trip will showcase the region's historic, current, and future uses of the waterfront, and will involve opportunities to learn about Fairhaven, the Buzzards Bay Coalition, the Marine Commerce Terminal, Whaling National Historical Park, and Vineyard Wind.

Speakers from: Fort Phoenix State Reservation, Buzzards Bay Coalition, New Bedford Port Authority, Vineyard Wind


Island Creek Oysters

Island Creek Oyster Farm Private Tour

Located on a mudflat in picturesque Duxbury Bay, Island Creek Oysters distributes and sells shellfish from over 100 farms. This trip will include a tour of their hatchery where you will learn how Island Creek creates the optimal conditions for shellfish reproduction and growth. Then, by boat, you will be taken out to see the farms on Duxbury Bay while being provided with an endless supply of oysters.

Speakers from: Island Creek Oyster Farm

Half-Day Field Trips

WEDNESDAY, JULY 20

Beginning at 12:30 p.m.

Boston Harbor Now Working Port Cruise

The Port of Boston is a major seaport located in Boston Harbor and is Massachusetts' largest port.

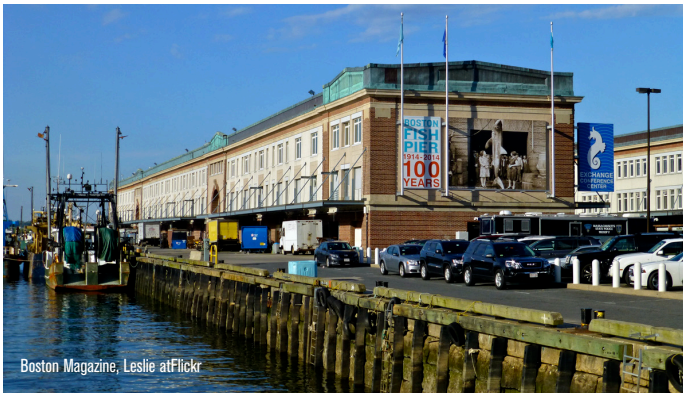

Boston Harbor Now

Participants will enjoy a three-hour narrated cruise of the four inner-harbor Designated Port Areas (DPA). This tour will depart from Columbia Point at UMass Boston and will visit the DPAs in South Boston, East Boston, Chelsea Creek, and Mystic River. A wide variety of guest speakers from government and industry will discuss the Boston waterfront's historic redevelopment boom and the recreational, economic, and industrial pressures on the harbor.

Speakers from: Boston Harbor Now, Massachusetts Port Authority, Boston Planning and Development Agency, Massachusetts Department of Environmental Protection, Exelon, Eastern Salt Co., Massachusetts Water Resources Authority, API Mass. Petroleum Council, Boston Line and Services Co., Boston Harbor Pilots

Boston Fish Pier and Red's Best

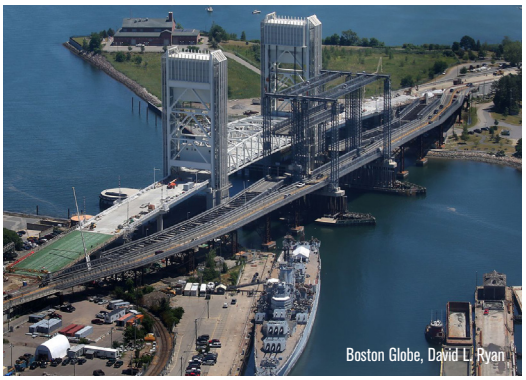
Red's Best, founded by Jared Auerbach in 2008, supports local fishing communities in the USA by providing a way for consumers to have direct access to fresh seafood. A native of Boston, Jared worked on commercial fishing vessels off the coast of both Alaska and Cape Cod, Massachusetts. During his work, Jared was witness to the struggles of traditional fishing communities. In light of his experience, Jared set out to create a brand to support the livelihoods of American fishermen and fisheries harvests. Through the development of proprietary data management software Red's Best is able to track daily catches as they land, and aggregate fisherman catches–packaging, labeling, and shipping them in an "unbroken chain of custody" to reduce the distance between fishermen and consumers. This field trip involves a tour of the Red's Best facility, located on the historic Boston Fish Pier, and a stop at the Boston Public Market & Eatery, which hosts one of Red's Best's local fish markets.



Boston Magazine, Leslie atFlickr

Speakers from: Red's Best

City of Quincy's Working Waterfront


Boston Globe, David L. Ryan

This field trip to the "City of Presidents", just south of Boston, will include a guided tour of the Fore River Shipyard. A working waterfront undergoing many changes, this waterfront supported one of the country's largest shipbuilding enterprises, and is home to the U.S Naval Shipbuilding Museum.The area has served vessels for transport and construction and continues to be used for a variety of industrial purposes. Following the shipyard tour, the City of Quincy will provide a personal guided tour of the Quincy Historical Society, located in the heart of Quincy Center. Participants will also have the opportunity to spend time exploring Quincy Center which includes several dining options, shops, and other historical attractions.

Speakers from: Fore River Shipyard, U.S. Naval and Shipbuilding Museum, USS Salem, Quincy Historical Society, City of Quincy

City of Chelsea, P.O.R.T. Park and Designated Port Area

The City of Chelsea is home to one of the ten Massachusetts Designated Port Areas (DPA). DPAs were created by the Massachusetts Office of Coastal Zone Management to promote and protect water-dependent industrial uses. This trip will involve a visit to the DPA, P.O.R.T. Park, and Rock Chapel Marine. P.O.R.T. (Publicly Organized Recreation Territory) Park, once a 13-million gallon oil tank farm, has been converted into a multi-use waterfront with a road-salt terminal, recreation area, and wildlife habitat landscape. The project has received various accolades for its design. While there, participants will hear from one of the P.O.R.T. Park designers and a city official who will talk about the city's planning efforts- both in the context of the harbor, DPA, and coastal resiliency.


Ibrahim Lopez-Hernandez for GreenRoots

Speakers from: The Landing Studio, City of Chelsea, Eastern Salt Co.

MassCEC Wind Technology Testing Center

Located along the shore of Boston's Mystic River, the Massachusetts Clean Energy Center's (MassCEC) Wind Technology Testing Center (WTTC) offers a full suite of certification tests for turbine blade sections up to 90 meters in length and is the largest commercial-scale blade testing center in the nation. Blade testing is required as part of turbine certification to meet international design standards, which allows developers to mitigate the technical and financial risk of deploying mass-produced wind turbines. WTTC is innovating and constantly improving testing methods to better represent field operations in the lab and to improve testing efficiency for wind industry partners. WTTC also offers the latest prototype development to help the wind industry deploy the next generation of offshore and land-based wind turbine technologies.


MassCEC

Speakers from: Massachusetts Clean Energy Center, Boston Harbor Shipyard and Marina

Conference Agenda

MONDAY	JULY 18, 2022
9:00 a.m. – 5:00 p.m.	Pre-Conference Training: Estimating the Local Working Waterfront Economy, ENOW, Location: Executive Office of Energy and Environmental Affairs (EEA) *Arrival and sign-up begins @ 8:30 AM with coffee and breakfast snacks
8:30 a.m. – 5:00 p.m.	Pre-Conference Field Trips: Provincetown, New Bedford, and, Island Creek Oyster Farm Duxbury
1:30 p.m. – 4:30 p.m.	Registration Opens @ Campus Center 3rd Floor
6:00 p.m. - 9:00 p.m.	**PRE-CONFERENCE EVENING RECEPTION** Location: Harpoon Brewery (Seaport District, Boston)
TUESDAY	**JULY 19, 2022**
7:45 a.m. – 5:00 p.m.	Registration open and sponsor set-up, Campus Center 3rd Floor
7:45 a.m. – 8:45 a.m.	Morning refreshments, visit sponsor displays, 3550 Ballroom, 3rd Floor Campus Center
8:45 a.m. – 9:00 a.m.	***Welcome Addresses*** ***Nicole Faghin,*** Chair, Exeuctive Committee, NWWN ***Kristin Uiterwyk,*** Director, Urban Harbors Institute, UMass Boston Location: 3550 Ballroom, 3rd Floor Campus Center
9:00 a.m. – 10:00 a.m.	**OPENING PLENARY:** **DEVELOPING AND DIVERSIFYING THE WORKFORCE FOR WORKING WATERFRONTS** **MODERATOR:** ***Natalie Springuel,*** Marine Extension Program Leader, Maine Sea Grant ***Robert Brown III,*** Program Coordinator, Youth Maritime Collaborative ***Ben Conniff,*** Co-founder & Chief Innovation Officer, Luke's Lobster ***Seth Lattrell,*** Port Authority Deuty/Planner at City of Salem ***Dominique Seibert***, Exentsion Agent, Louisiana Sea Grant Location: 3550 Ballroom, 3rd Floor Campus Center
10:00 a.m. – 10:30 a.m.	Refreshment break, visit sponsor displays, 3550 Ballroom, 3rd Floor Campus Center

10:30 a.m. – 12:00 p.m.	**CONCURRENT SESSION A**				
Session	**A1 Panel**	**A2 Roundtable**	**A3 Panel**	**A4 Panel**	**A5 Roundtable**
Location	CC 3540	CC 3545	Wheatley 1-004	Wheatley 02-198	Wheatley 02-200
Moderator	**Kate Quigley**	**Brett Veerhusen**	**Bryan Fluech**	**Joseph Sutkowi**	**Paul Kirshen**
Title	Using Local-Level Economic Data to Inform Decision Making Stories from Waterfront Communities	U.S. Marine Aquaculture: Perceptions and Insights from a Multi=Year National Dialogue Across Sectors	Sea Grant in Action: Coordinating a National and Local Response to the Pandemic	Designing for Resilience, Ecology, and Access at the Water's Edge	Collaborative Centers for Resilient Working Waterfronts I: The Example of the Northeast Center for Coastal Resilience
Speakers	**Kristen Grant** **Jody Thompson** **Ravi Chittilla**	**Brett Veerhusen** **Meghan Massaua**	**Bryan Fluech** **Stephanie Otts**	**Joseph Sutkowi** **Kaitlyn Frega** **Max Mozo**	**Hannah Baranes** **Sheree Pagsuyoin** **Elisabeth Hamin Infield** **Katie Kahl** **Krish Thiagarajan Sharman**
12:00 p.m. - 1:00 p.m.	Lunch Provided				
1:00 p.m. – 2:40 p.m.	**CONCURRENT SESSION B (*Presentations)***				
Session	**B1**	**B2**	**B3**	**B4**	**B5**
Location	CC 3540	CC 3545	Wheatley 01-004	Wheatley 02-198	Wheatley 02-200
Moderator	**April Turner**	**Nicole Faghin**	**Kenneth Walker**	**Sam Belknap**	**Mark Huang**
	Seth Rolbein Small Boats, Big Taste: One Creative, Broad-based Response to the Pandemic	***Natalie Beard*** Port Houston: Moving Landscape Environmental Benefits that Redefine a Port's Role in the Region	***Rhonda Price*** Restoration of the Historic MV SailFish	***Michael DiMeo*** Tools for a Vibrant and Resilient Working Waterfront: A Harbormaster's Perspective	***Linda D'Anna*** Marine Energy, Communities, and Maritime Economies: Connecting Stakeholders in a New National Center
	Story Reed COVID Impact on Massachusetts Seafood Value and the Rebound in 2021	***Heather Weitzner*** Sustainable Ecological Enhancement of Port Infrastructure: Port of San Diego	***Afton Vigue*** ***Jaclyn Robidoux*** Aquatourism as a Tool to Diversify Working Waterfronts: The Maine Oyster Trail Case Study	***Rex Caffey*** Projected Infrastructure, Revenue and Resource Losses to Louisiana Fisheries from the Hurricanes of 2020 and 2021	***Erin Perry*** Making the Case for Climate Action

	Peter Halmay Bringing Local Fish to the Community During the Pandemic	***Richard Burroughs*** The Town Docks of Narragansett Bay, Rhode Island	***John Duff*** Legal Turning Points Related to Boston's Waterfront Governance 1620s-1970s	***Chad Strater*** Small Footprint, Large Impact: The Effects of Working Waterfront on Coastal Communities	***Leslie-Ann McGee*** Resilient Woods Hole: Demonstrating the Power of a Private-Public Economy Villagae Partnership in Implementing Community Climate Resiliency Solutions
		James Fawcett ***Michael Liffman*** Taking the Mystery Out of Seaport Operations: Discussion I	***Courtney Humphries*** How Do Coastal Protection Policies of the Past Impact Climate Adaptation?	***Jaclyn Robidoux*** Seaweed Aquaculture in Maine: A Decade of Innovation and Development on Maine's Working Waterfront	***Margaret Pilaro*** Blue Economy and Climate Resiliency Initiatives at the Port of San Diego
		Christopher Petrone Taking the Mystery Out of Seaport Operations: Discussion II	***Joseph Lucente*** Tourism Development and Promotion: Utilizing Shipwrecks, Coastal Tourism, and Maritime Heritage as Economic Development Tools	***Rachel Bratton*** Understanding Shoreside Infrastructure Challenges in the Massachusetts Summertime Fluke Fishery	
2:40 p.m. - 3:10 p.m.	Refreshment break, visit sponsor displays, 3550 Ballroom, 3rd Floor Campus Center				
3:10 p.m. – 4:50 p.m.	**CONCURRENT SESSION C**				
Session	**C1 Panel**	**C2 Panel**	**C3 Panel**	**C4 Roundtable**	**C5 Roundtable**
Location	CC 3540	CC 3545	Wheatley 01-004	Wheatley 02-198	Wheatley 02-200
Moderator	**Gabriel Cira**	**Zoe Mueller**	**Hugh Cowperthwaite**	**Gwendolyn Gallagher**	**Elisabeth Hamin Infield** **Karen Whelan-Berry**

Title	Greening the Blue Economy with Nature-Based Coastal Resilience	Finding Balance, Co-Benefits and Productive Tension in New England's Heritage Working Waterfronts	Maine's Working Waterfront Access Protection Program - Lessons in Innovation through Coastal Land Preservation for Tomorrow's Marine Economy	Sea Grant's Role in Offshore Wind Energy Development	Resilient Working Waterfronts II: Opportunities and Challenges in the Northeast and Beyond
Speakers	**Gabriel Cira Kannan Thiruvengadam Louiza Wise Tanya Hahnel Bianca Bowman John Walkey**	**Zoë Mueller Matthew Litell**	**Hugh Cowperthwaite Melissa Britsch Laura Graham Dave Dickison**	**Gwendolyn Gallagher Jennifer McCann Claire Hodson Katy Bland**	**Katie Kahl Stratton Lloyd Kirk Bosma Paul Kirshen**
6:00 p.m. - 9:00 p.m.	**EVENING WELCOME RECEPTION** Location: ReelHouse Marina Bay (Marina Bay, Quincy)				
WEDNESDAY	**JULY 20, 2022**				
7:45 a.m. – 5:00 p.m.	Registration open and sponsor set-up, 3rd Floor Campus Center				
7:45 a.m. – 9:00 a.m.	Morning refreshments, visit sponsor displays, 3550 Ballroom, 3rd Floor Campus Center				
9:00 a.m. - 10:00 a.m.	***Welcome Addresses*** ***&*** **KEYNOTE SPEAKER:** ***Karyn Polito,*** Lieutenant Governor of Massachusetts ***Lisa Engler***, Director, Massachusetts Office of Coastal Zone Management ***Jospeh Berger,*** Provost and Vice Chancellor for Academic Affairs, UMass Boston Location: 3550 Ballroom, 3rd Floor Campus Center				
10:00 a.m. - 10: 30 a.m.	Refreshment break, visit sponsor displays, 3550 Ballroom, 3rd Floor Campus Center				
10:30 a.m. – 12:00 p.m.	**CONCURRENT SESSION D**				
Session	**D1 Panel**	**D2 Panel**	**D3 Panel**	**D4 Panel**	**D5 Roundtable**
Location	CC 3540	CC 3545	Wheatley 01-004	Wheatley 02-198	Wheatley 02-200
Moderator	**Betsy Nicholson**	**Tim Wagner**	**Stephanie Otts**	**Jennifer**	**Joshua Brown**
Title	New England's Working Waterfronts – Adapting to Change	Working Waterfront Transitions: Lesson for Climate Adaptation from the Great Lakes	Direct Seafood Sales: Gaining an Understanding of Supply Chains and State Regulation	Developing Synergies between Offshore Wind Energy and the Fishing Community: Reality of Myth?	Planning for the Future: The 2021-2027 National Sea Grant Strategic Plan

Speakers	**Betsy Nicholson Kathleen Leyden Lisa Engler Brian Thompson**	**Tim Wagner Adam Tindall-Schlicht Jenny Osburn Cory Mason**	**Stephanie Otts Joshua Stoll Jamie Doyle**	**Jennifer McCann Claire Hodson Abbey Greene**	**Joshua Brown Ana Sosa Chuck Weirich**
12:00 p.m. - 12:30 p.m.	Box Lunch Provided				
12:30 p.m. - 5:00 p.m.	**FIELD TRIPS:** Boston Harbor Now Working Port Cruise Boston Fish Pier and Red's Best City of Quincy City of Chelsea MassCEC Wind Technology Testing Center & Boston Harbor Shipyard and Marina				
THURSDAY	**JULY 21, 2022**				
7:45 a.m. - 3:30 p.m.	Registration open and sponsor set-up, 3rd Floor Campus Center				
7:45 a.m. - 9:00 a.m.	Morning refreshments, visit sponsor displays, 3550 Ballroom, 3rd Floor Campus Center				
9:00 a.m. - 9:35 a.m.	***Welcome Addresses*** ***&*** **KEYNOTE SPEAKER:** ***Chellie Pingree,*** United States Representative Location: 3550 Ballroom, 3rd Floor Campus Center				
9:40 a.m. - 10:40 a.m.	**PLENARY:** **HOT TOPICS FOR NWWN: FINDING COMMON GROUND** **MODERATOR:** ***Nicole Faghin,*** Chair, Executive Committee, NWWN ***Sam Belknap,*** Senior community Development Officer, Island Institute ***Randall Lyons,*** Executive Director, Massachusetts Marine Trades Association ***Joseph Sutkowi***, Waterfront Design Associate Director, Waterfront Alliance Location: 3550 Ballroom, 3rd Floor Campus Center				
10:40 a.m. - 11:00 a.m.	Refreshment break, visit sponsor displays, 3550 Ballroom, 3rd Floor Campus Center				

<table>
<tr><td>11:00 a.m. - 12:30 p.m.</td><td colspan="5">CONCURRENT SESSION E</td></tr>
<tr><td>Session</td><td>E1 Presentations</td><td>E2 Presentations</td><td>E3 Presentations</td><td>E4 Panel</td><td>E5 Panel</td></tr>
<tr><td>Location</td><td>CC 3540</td><td>CC 3545</td><td>Wheatley 01-004</td><td>Wheatley 02-198</td><td>Wheatley 02-200</td></tr>
<tr><td>Moderator</td><td>Ben Martens</td><td>Colleen Roche</td><td>Jamie Doyle</td><td>Nicole Faghin</td><td>Jody Thonpson</td></tr>
<tr><td rowspan="4"></td><td rowspan="4">How Do We Define, Monitor, and Protect Working Waterfront Infrastructure and Access for Commercial Fishermen?

Speakers:
Ben Martens
Jessica Joyce
Josee Stetich</td><td rowspan="4">How NOAA and its Partners Work Together to Support Working Waterfront Communities to Address the Changing Stressors on Working Waterfronts Including the Impacts of Offshore Wind on Scientific Surveys and Climate

Speakers:
Colleen Roche
Steve McKenna
Becca Newhall
Jennifer McCann
Andrew Lipsky</td><td>Titus Seilheimer
If the Habitat isn't on the Map, Does it Exist? Unexpected Habitat Features in Lake Michigan's Developed Harbors</td><td>Niki Pace
Seeking Shelter from the Storm: Harbors of Refuge from Hurricanes and Tropical Storms in Louisiana</td><td>Kristin Uiterwyk
Unconventional Pathways Focusing on What Matters: A Co-Produced Seafood Internship Program</td></tr>
<tr><td>Thomas Shyka
NERACOOS: Delivering Data for the Working Waterfront</td><td>Chloe Schaefer
Estimating the Economic Impact of Cape Cod Harbors</td><td>April Turner
A South Carolina Sea Grant Consortium Initiated Partnership to Preserve Maritime Heritage and Plan for a Sustainable Future</td></tr>
<tr><td>Julia Noordyk
Advancing Green Infrastructure at Great Lakes Marinas</td><td>Bill Needelman
Dredging Piers, Wharfs, and Marinas in Portland Harbor: Making the Impossible Achievable</td><td>Mark Huang
Katherine Woolford
Bluetech: What is it? Why Now? Where?</td></tr>
<tr><td></td><td>Kimberly Starbuck
Port by Port: Profiles and Analysis of the Massachusetts Commercial Fishery</td><td>Randall Lyons
Workforce Issues Within the Maritime Industry</td></tr>
<tr><td>12:30 p.m. - 1:40 p.m.</td><td colspan="5">Lunch Provided
Poster Session (Begins at 12:30 p.m.)
Visit sponsor displays</td></tr>
</table>

Posters & Presenters	**Katy Bland,** Ocean Observing to Support the Northeastern Working Waterfront **Kristin Kelleher,** Equinor Wind US and Fisheries and Marine Engagement **Leslie Nguyen**, Assessing Marine Industry Compliance in the Crabber-Towboat Agreement **Madelyn Smith**, An Economic Development Strategy for Louisiana's Freshwater Seafood Industry **Jody Thompson**, Stories from the Alabama Waterfront: Preserving the Oral Histories of Bayou La Batre				
1:40 p.m. – 3:10 p.m.	**CONCURRENT SESSION F**				
Session	**F1 Panel**	**F2 Panel**	**F3 Panel**	**F4 Panel**	**F5 Panel**
Location	CC 3540	CC 3545	Wheatley 01-004	Wheatley 02-198	Wheatley 02-200
Moderator	**Sam Belknap**	**Natalie Springuel**	**Lisa Engler**	**Kathryn Glenn**	**Jill Valdés Horwood**
Title	Our Blue Future: Toward a Decarbonized Seafood Supply Chain	The Young Fishermen's Development Act: Training Needs for the Next Generation	Leveraging Partnerships and Funding to Create Thriving Working Waterfronts for Traditional Maritime Industries and the Emerging Offshore Wind Indusry in Massachusetts and the Region	Resiliency in Working Waterfronts	Updating Boston Harbor's Designated Port Areas for 21st Century Challenges
Speakers	**Sam Belknap** **Ben Conniff** **Matt Tarpey** **Boe Marsh**	**Natalie Springuel** **Josh Brown** **Ben Martens** **Bryan Fluech** **Theresa Talley**	**Lisa Engler** **Bruce Carlisle** **Seth Lattrell** **John Regan** **Nate Mayo**	**Ceaser Duarte** **Vito Giacalone** **Brad Washburn**	**Julie Wormser** **John Walkey** **Magdalena LaBattaglia**
3:10 p.m. - 3:20 p.m.	Refreshment break, visit sponsor displays, 3550 Ballroom, 3rd Floor Campus Center				
3:20 p.m. - 3:35 p.m.	**CLOSING REMARKS**				

Keynotes

Lieutenant Governor of Massachusetts Karyn Polito

WEDNESDAY, JULY 20, 2022
8:45 AM - 10:00 AM

U.S. Representative Chellie Pingree

THURSDAY, JULY 21, 2022
8:45 AM - 9:35 AM

Opening Plenary

Tuesday, July 19, 2022

9:00 AM - 10:00 AM

Panel: Developing and Diversifying the Workforce of Working Waterfronts

Natalie Springuel (Moderator)

Robert Brown III

Ben Conniff

Seth Lattrell

Dominique Seibert

We are pleased to open the 6th National Working Waterfront Network Conference with experts from the East, West, and Gulf coasts of the United States who will speak about the importance of educating and diversifying the future workforce of working waterfronts. Panelists include Robert Brown III, program manager of Youth Maritime Collaborative; Ben Conniff, co-founder and chief innovation officer of Luke's Lobster; Seth Lattrell, port authority deputy/planner at the City of Salem; and Dominique Seibert, marine extension agent at Louisiana Sea Grant.

Working waterfronts are an integral component of coastal communities, aiding in economic growth and development, yet meeting workforce needs in maritime industries is an ongoing challenge. Commercial fishing communities have termed this the "graying of the fleet", with the average age of a commercial fisherman increasing. As the maritime sector grows and workers retire, there is an increased need to fill jobs and an opportunity to diversify the workforce.

A major key in meeting workforce demand is to provide opportunities for people to develop skills that match emerging employment sectors. In the case of maritime industries and commercial fisheries, part of this is investing in educational programs that expose people to marine activities, granting the opportunity to explore the maritime sector and the overall ocean environment. Also important is providing training opportunities that equip future employees with the necessary skills to work in the maritime sector.

The National Working Waterfront Network and panelists will address challenges the maritime sector faces in developing a workforce, and what it takes to provide and manage maritime education, with a focus on engaging under-represented groups.

Closing Plenary

Thursday, July 21, 2022

9:50 AM - 10:50 AM

Panel: Hot Topics for the NWWN: Finding Common Ground

Nicole Faghin (Moderator)

Sam Belknap

Kathleen Leyden (invited)

Randall Lyons

Joseph Sutkowi

Whatare the HOT TOPICS all working waterfronts confront? How can NWWN support you?

During this plenary session we will first hear from a few of our working waterfront partners about issues they are confronting that affect nearly all working waterfronts: public access, workforce development, and coastal resiliency. Then it's your turn. In breakout sessions we will ask you to tell us about your challenges -- whether it's public access, workforce needs, ownership and conversion of a waterfront, resilience of waterfront infrastrcuture, permitting and regulation, economic challenges, working waterfront protection or support programs, or public awareness of working waterfronts. With your input we intend to craft a needs assessment to understand how NWWN can support you better.

Biographies

Keynote Speakers

Lieutenant Governor of Massachusetts Karyn Polito

Lieutenant Governor Karyn Polito was sworn in for a second term as the 72nd Lieutenant Governor of the Commonwealth of Massachusetts on January 3, 2019. Throughout her tenure, she has focused on moving Massachusetts forward through bipartisan, results-driven leadership.

Since taking office with Governor Charlie Baker, Lt. Governor Karyn Polito has visited and partnered with leadership in all 351 of the Commonwealth's cities and towns, signing Community Compact agreements with every municipality on more than 800 smarter ways to deliver services. Additionally, under her leadership, the Seaport Economic Council has directed more focus and support to helping coastal communities address their unique challenges and economic opportunities. Lt. Governor Polito has worked closely with local officials to encourage housing production through the Housing Choice Initiative, improve roadways, sidewalks, bicycle lanes, pathways, and intersections through the Complete Streets program, and invest in on-the-ground, proactive projects to address climate change impacts through the Municipal Vulnerability Preparedness program.

As co-chair of the STEM Advisory Council, Lt. Governor Polito has encouraged further opportunities in STEM education to inspire more students to get involved in these important fields and better connect them to good careers. As chair of the Governor's Council to Address Sexual Assault and Domestic Violence, Lt. Governor Polito and a diverse team of professionals have brought innovative approaches to combating domestic violence.

Lt. Governor Polito is a lifelong resident of Shrewsbury where she owns and operates a commercial real estate development firm and lives with her husband, Stephan M. Rodolakis, and their two children.

U.S. Representative Chellie Pingree, 1st District, Maine

Congresswoman Chellie Pingree represents Maine's 1st District and is a national leader in climate policy. Living on the offshore island of North Haven, Chellie has been recognized for her leadership in helping coastal communities address threats to their future. In Congress, Chellie is an advocate for advancing federal policy to better support the blue economy and sustainable fisheries and protect our oceans. In the 117th Congress, Chellie was named Chair of the Appropriations Subcommittee on Interior, Environment and Related Agencies. In this role, she continues her focus on addressing the climate crisis, creating good-paying jobs, and fostering equity. Chellie also serves on the House Agriculture Committee and the House Appropriations Subcommittees on Agriculture and Military Construction, Veterans Affairs, and Related Agencies.

Plenary Speakers

Sam Belknap

Senior Community Development Officer at Island Institute

Sam Belknap is a Senior Community Development Officer at the Island Institute and an impact-driven advocate for Maine's blue economy and working waterfronts. As a third-generation lobstermen, Sam has an intimate knowledge of Maine's marine sectors. He has operated his own boat and run his family's lobster wharf where they bought and sold lobsters and processed lobster and crab meat. Trained as both an anthropologist and a climate scientist, his academic and professional pursuits have focused on the intersection of Maine's blue economy and the impacts of climate change.

Robert Brown III
Project Manager of Youth Maritime Collaborative

Robert Brown III is the Project Manager of the Youth Maritime Collaborative. He was born and raised in Seattle, Washington and studied at the University of Washington where he earned his B.A in Psychology. Robert began his maritime journey with SSA Marine as a Strategy & Operations intern. As the Youth Maritime Collaborative Program Manager, Robert acts as a liaison between maritime employers and the striving youthful workforce. He works closely with the youth organizations and employers to create a more equitable and accessible pathway for underserved populations to land a career in the maritime industry. His shared lived experiences with youth he serves enables him to tighten the opportunity gap for students furthest away from maritime access. In his free time, Robert coaches middle school basketball and loves to travel with his family and dog.

Ben Conniff
Co-founder & Chief Innovation Officer of Luke's Lobster

Ben Conniff co-founded Luke's Lobster, a Maine sustainable seafood company buying directly from fishermen to supply their restaurant group, branded grocery business, and direct-to-consumer online market. Luke's is a Certified B Corp and has the highest B Corp score of any restaurant group or seafood company in the US. Ben has worn almost every hat through Luke's Lobster's evolution, but currently focuses on the brand's innovation, environmental sustainability, and social responsibility. He's the author of Real Maine Food: 100 Plates from Fishermen, Farmers, Pie Champs, and Clam Shacks, and has also written for Saveur, Food 52, GQ, Smithsonian, Yankee, and Tasting Table. Ben sits on the board of the Maine Lobster Marketing Collaborative and the Maine Business Immigration Coalition, and is an advisor to many startup food and beverage companies. He lives in Portland, Maine, with his wife and dog.

Nicole Faghin (Moderator)
Coastal Management Specialist (*retired*),
Washington Sea Grant, University of Washington

Nicole Faghin is a Coastal Management Specialist recently retired from Washington Sea Grant at the University of Washington. She trained as a land use and environmental planner and lawyer specializing in waterfront planning issues. Throughout her career Nicole engaged in education, outreach and research focused on social, economic and environmental shoreline issues including those associated with working waterfronts. Nicole just completed her term as chair of the National Working Waterfront Network. Nicole holds a master's in city planning from MIT and a law degree from Northeastern University.

Seth Lattrell
Port Authority Deputy/Planner, City of Salem, MA

As Port Authority Deputy and Planner for the City of Salem, Seth Lattrell manages Salem's waterfront planning efforts and is the City's lead for coordinating the redevelopment of Salem Harbor as the State's second major offshore wind port through a public-private partnership with Crowley and Avangrid Renewables. Seth represents the city in all things related to offshore wind, including workforce development, community engagement, and supply chain development efforts. Seth has nearly a decade of experience in coastal development, having previously worked as a consultant managing environmental permitting efforts for a wide array of complex urban and coastal projects throughout the Commonwealth on behalf of private developers, municipalities, and state agencies, as well as infrastructure and energy projects. Seth resides in Ipswich and holds a B.A. in Maritime Studies from the University of Connecticut.

Randall Lyons

Executive Director of Massachusetts Marine Trades Association

Randall Lyons has had the pleasure of working in the Massachusetts recreational boating industry for the last 25 years starting in a seasonal position during college. Randall is currently the Executive Director for the Massachusetts Marine Trades Association (MMTA). He has been in this position for the last 5 years. Randall is also a Trustee with the Mass Marine Trades Educational Trust (MMTET), a Board member of the MassHire State Workforce Board, the New England Marine Trades Association (NEMTA), a member of the Stellwagen Bank Sanctuary Advisory Council and a board member for IMTRA. Randall started a Kid's in Boating initiative with the MMTA and the MMTET to focus on introducing more young people to boating and fishing, which he continues to remain passionate about. Randall was the Co-Chair of the state recreational boating Covid-19 reopening task force.

Dominique Seibert

Extension Agent, Plaquemines and St. Bernard Parishes, Louisiana Sea Grant

Dominique Seibert works for Louisiana Sea Grant, specializing in fisheries and coastal issues. A Louisiana native, Dominique began her career working as a species specialist for the U.S. Coast Guard during the BP Oil Spill and for the Louisiana Department of Wildlife and Fisheries as a marine biologist. She now works in St. Bernard and Plaquemines parishes (the toe of the Louisiana boot) and focuses on sustainable fishing, direct to consumer markets, youth development, resiliency, and coastal restoration projects. In this position, she frequently leads programming for young adult education in workforce development. She provides training and materials to those looking to advance their fishery business practices, improve seafood handling, and develop ecotourism. She received her Bachelor of Science in Biological Sciences with a concentration in Ecology, Environment, and Evolution from Southeastern Louisiana University and is currently pursuing a master's degree at Louisiana State University.

Natalie Springuel (Moderator)

Maine Extension Program Leader, Maine Sea Grant

Natalie Springuel is Marine Extension Program Leader at the University of Maine Sea Grant program, with an extension office based at College of the Atlantic in Bar Harbor, Maine. Sea Grant is a partnership between U.Maine and National Oceanic and Atmospheric Administration (NOAA), supporting marine science for Maine people. Springuel's program areas address working waterfronts and coastal access, fisheries heritage, aquaculture, and sustainable tourism planning. She is a core collaborator with the Mapping Ocean Stories project, coordinator of the Downeast Fisheries Trail, co-founder of the National Working Waterfront Network, and host of the award-winning public affairs show on WERU Community Radio called Coastal Conversations. She often serves as a neutral facilitator in coastal community discussions and supports open dialogue around challenging coastal issues.

Joseph Sutkowi

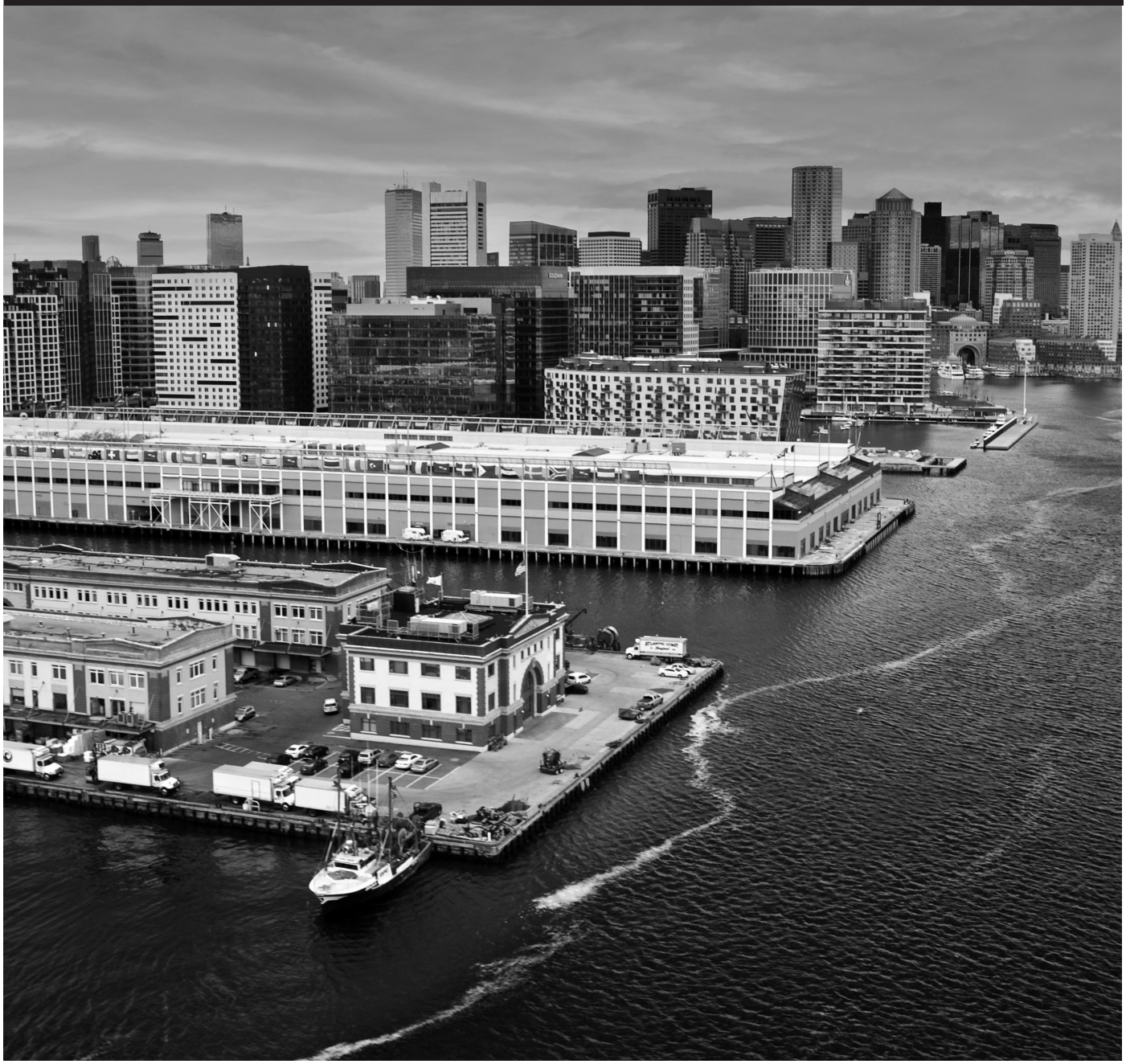
Waterfront Design Associate Director, Waterfront Alliance

Joseph Sutkowi, is the Waterfront Design Associate Director at the Waterfront Alliance, leading the WEDG® (Waterfront Edge Design Guidelines) program. He brings significant experience in ports and waterfront operations, economic development policy, and infrastructure. Previously, Joseph was a senior consultant at Karp Strategies, a New York City-based urban planning and economic development consulting firm where he led projects in infrastructure and sustainability. In previous roles, Joseph worked with Living Cities on equitable procurement, a New York City Council member on transportation, the American Red Cross in disaster response operations, and the University of Michigan in foundation relations.

Concurrent Sessions

Abstract And Session Descriptions

(Listed in order of appearance on the agenda)



Concurrent Sessions A1-A5

TUESDAY, JULY 19, 10:30 AM - 12:00 PM

Session A1

Location: Campus Center 3540

Theme: Waterfront Industries

Using Local-Level Economic Data to Inform Decision-Making: Stories from Waterfront Communities

Panel

Kate Quigley, NOAA Office for Coastal Management, Charleston, SC

Kristen Grant, Maine Sea Grant & University of Maine Cooperative Extension at the Wells Reserve, Wells, ME

Jody Thompson, Mississippi-Alabama Sea Grant, Mobile, AL

Ravi Chittilla, Lynker/CSS at NOAA Office for Coastal Management, Charleston, SC

Patricia Sweriduk,Town of Dartmouth Conservation Commission, Dartmouth, MA

Starting with an economic framework developed by NOAA, Maine Sea Grant, and the National Working Waterfront Network, waterfront communities around the country are planning and applying local economic analysis to guide decision-making. Communities in Maine, Massachusetts, and Alabama will share their stories of working with a variety of data sources to better understand the composition, size, and values of their working waterfronts. This information is being used to strengthen grant applications for improving aging infrastructure, to plan for economic development, and to determine risk to critical economic industries from coastal hazards. Join this panel session to hear about how economic data are being applied, and how communities are working together to pool resources.

Session A2

Location: Campus Center 3545

Theme: Commercial Fisheries and Aquaculture

US Marine Aquaculture: Perceptions and Insights from a Multi-Year National Dialogue Across Sectors

Roundtable Discussion

Brett Veerhusen, Ocean Strategies Inc., Seattle, WA

Meghan Massaua, Meridian Institute, Washington, DC

Meridian Institute and Ocean Strategies have been working collaboratively on a multi-year project to gain an understanding of the broad range of perspectives on the future of marine aquaculture in the US. We interviewed close to 100 individuals across sectors, to listen and learn. This includes a broad set of actors from the environmental NGO community, commercial fishing industry, aquaculture industry, recreational fishing community, the aquaculture finance community, the seafood supply chain, and leaders on diversity, equity, and inclusion in the aquaculture field. Through continued, integrated dialogue, we are fostering cross-sectoral learning and understanding. This Roundtable Discussion will feature the project's lead researchers sharing insights and generating discussion and feedback from participants on stakeholder needs and alignment, including challenges and opportunities for the future of marine aquaculture in the US. Advancing the nation's Blue Economy remains a priority for government agencies, administrations and industry. Done right, aquaculture can help provide US consumers with more seafood choice in a less carbon intensive manner than other forms of protein production. However, ensuring marine aquaculture is done sustainably and responsibly requires understanding and accounting for the needs

and perspectives of other ocean interests. Currently, the United States lacks a comprehensive federal regulatory framework for offshore aquaculture which presents challenges for stakeholders, developers, and investors. Insight synthesis documents and other materials will be provided to the audience.

Session A3

Location: Wheatley 1-004

Theme: COVID-Related Impacts, Innovations, and Recovery

Sea Grant in Action: Coordinating a National and Local Response to the COVID-19 Pandemic

Panel

Panelists:

Bryan Fluech, University of Georgia Marine Extension & Georgia Sea Grant, Athens, GA

Stephanie Otts, National Sea Grant Law Center At University of Mississippi, Pontotoc, MI

The COVID-19 pandemic has consumed the country's, and the world's, attention the past year and a half. As with other disasters and challenges, Sea Grant has remained nimble and worked quickly to provide rapid response actions to the coastal and Great Lakes communities it serves. At the national level and in consultation with our partners, Sea Grant redirected $3.4 million in FY2020 federal funding to support rapid response efforts. These efforts include 34 projects, each funded at $100,000. Of the $3.4 million, $2.48 million was specifically focused to support the U.S. aquaculture industry. Based on local community input, Sea Grant programs across the country proposed innovative strategies to utilize the rapid response funds in ways that have had direct and immediate impacts for their coastal and Great Lakes communities. Examples of response activities have included enhancing access to aquaculture products for consumers via CSA style direct sales efforts, seafood "trails" to highlight local producers, and localized farm to table programs; conducting rapid and long-term needs assessments among producers, drafting recommendations for action, and communicating the needs and potential solutions to decision makers; and providing marketing resources and conducting needs assessments for tourism and charter businesses. Besides these newly proposed and supported activities, Sea Grant programs also adapted existing programming in target ways to support their coastal and Great Lake communities including working waterfronts within them. In coordination with stakeholders, programs have enriched online material to support the seafood and aquaculture industries and serve educators and parents, facilitated virtual coordination and meetings to ensure continued effective functioning not only of the individual programs but also the full network, and enhanced systems to collect and share best management practices. This Break Out "Panel" Session will provide a network overview of how the National Sea Grant Program has responded to challenges brought forth by the COVID-19 pandemic in U.S. coastal and Great Lake communities, as well as highlight specific examples of rapid-response projects implemented by Maine and MIT Sea Grant as well as the National Sea Grant Law Center that helped address issues faced by working waterfront communities during the pandemic.

Session A4

Location: Wheatley 02-198

Theme: Waterfront Infrastructure

Concurrent Sessions A1-A5

TUESDAY, JULY 19, 10:30 AM - 12:00 PM

Designing for Resilience, Ecology, and Access at the Water's Edge

Panel

Joseph Sutkowi, Waterfront Alliance, New York, NY

Kaitlyn Frega, McLaren Engineering Group, NY

Max Mozo, Jacobs, Jacksonville, FL

The award-winning WEDG® (Waterfront Edge Design Guidelines) program is the gold standard for resilient, ecologically sound, and accessible projects that touch the water's edge in coastal cities. WEDG projects include everything from industrial facilities in the Bronx and mixed-use developments in Brooklyn to public park space in North Carolina. In Summer 2022, Waterfront Alliance will launch the third version of WEDG which applies the program to inland waterways. Through this session, we will explore WEDG as a national rating system designed for use on the working waterfront, including updates to the standards and an overview of the program's principles. We will then dive into two projects in-depth to help illustrate WEDG principles in practice. Through a discussion of two NYC projects, we will see how WEDG principles were utilized and how the project scored against the standards. Through a discussion of a riverwalk project in Jacksonville, we will explore how the revised WEDG standards would apply on the project. From intricate ecosystems to overlapping jurisdictions and land use policies, waterfront design is complex, even for the most seasoned planners, practitioners, and communities. As a voluntary rating system for waterfront projects, WEDG works with projects on the working waterfront to reduce environmental impact, increase public access, and protect assets and communities from climate change. We will explore the design elements incorporated to achieve WEDG verification for two projects, including Domino Park and 1 Java Street Redevelopment, both in Brooklyn, New York. Domino Park, which opened in 2018, features repurposed historical elements and nods to the site's previous use as a factory, public waterfront access space and resilience strategies to mitigate climate change. Lessons learned from Domino Park are currently being applied to the 1 Java Street Redevelopment project, which is another waterfront open space that incorporates ferry access, community programming, direct access to the water and natural shoreline features. We will then venture to the Southbank Riverwalk Replacement in Jacksonville, Florida to explore another waterfront project that replaced 4,600 feet of existing timber walkway which includes floating dock installations that serve as river taxi stops and a fixed dock to provide anchoring to other vessels. Through this project along the St. John's River, we will explore some of the differences between coastal and riverine environments and how WEDG could be applied to future projects of this nature. This session is intended for participants who design, own, or build on waterfront sites, local, regional, state, and federal agencies who influence development and design standards, environmental, engineering, and maritime consultants, and advocates who work with communities around waterfront issues.

Session A5

Location: Wheatley 2-0200

Theme: Climate Change

Collaborative Centers for Resilient Working Waterfronts I: The Example of the Northeast Center for Coastal Resilience

Roundtable Discussion

Paul Kirshen, UMass Boston, Boston, MA

Hannah Baranes, Gulf of Maine Research Institute, Portland, ME

Sheree Pagsuyoin, UMass Lowell, Lowell, MA

Elisabeth Hamin Infield, UMass Amherst, Amherst, MA

Krish Thiagarajan Sharman, UMass Amherst, Amherst, MA

Katie Kahl, UMass Amherst, Amherst, MA

There is an urgent need for regional collaboration to better understand the risks and impacts of climate change as well as the promising opportunities for the Blue Economy, adaptive planning, and coastal resilience. Climate change impacts on the Northeast will be most acute at the coast. New England is experiencing faster rates of atmospheric warming, coastal waters warming, and sea-level rise than most continental United States, creating compounded challenges. In Massachusetts, communities and working waterfronts are increasingly impacted by extreme storm and precipitation events, high-tide flooding, storm surge inundation, and erosion. Responding to these rapidly increasing pressures on natural and built systems requires a holistic, systems-based approach to research, planning, development, training, and engagement with sustainable practices to enhance participatory co-production, adaptation, and resilience. The Northeast Center for Coastal Resilience (NCCR) serves as a regional knowledge hub to provide actionable coastal science, inform policy and local decision making, support sustainable blue economy development, and facilitate strategic regional collaborations in working waterfronts. NCCR is a multi-institutional collaboration of UMass Amherst (UMA), UMass Boston (UMB), UMass Dartmouth (UMD), UMass Lowell (UML), and Woods Hole Group (WHG). Initial activities will focus on: • The biophysical stressors affecting the people, working waterfronts, and other natural and built landscapes of coastal Massachusetts and New England • Vulnerability and adaptive capacity across populations, institutions, and sectors of the Blue Economy • Participatory adaptive planning for the Blue Economy that integrates indigenous knowledge, deep uncertainty practices, and new actionable science • Risk management strategies and best practices, integrating Nature-Based Solutions (NBS) Moderated by Paul Kirshen (UMB), the session will include brief 10-minute presentations followed by 20 minutes for discussion and questions.

Concurrent Sessions B1-B5

TUESDAY, JULY 19, 1:00 PM - 2:40 PM

Session B1

Location: Campus Center 3540

Theme: COVID-Related Impacts, Innovations, and Recovery

Oral Presentations

Small Boats, Big Taste: One Creative, Broad-based Response to the Pandemic

Seth Rolbein, Cape Cod Fishermen's Alliance, Cape Cod, MA

This presentation details the creation and implementation of a new program in direct response to the COVID crisis, created by the Cape Cod Commercial Fishermen's Alliance, to help independent fishermen stay on the water, supply regional food banks and pantries with a delicious seafood product, and build a sustainable, integrated industry model moving forward. Called "Small Boats, Big Taste," this initiative created infrastructure and a supply chain linking fishermen, a regional fish processer, and a regional chowder manufacturer to produce a haddock chowder for distribution to people with food insecurity. Key support from the Greater Boston Food Bank and the Massachusetts Food Emergency Assistance Program also was built into the model. A pilot program was created with strong philanthropic support as well as grants and partnerships from Sea Grant COVID-19 Rapid Response funding, the MIT Sea Grant Program, and Cape Cod Health Care Foundation. Next steps have focused on building sustainability, including outreach for new customer and client relationships at schools, assisted living facilities, and other larger scale kitchens. A second product, using plentiful local skates as the fish for a "Provencal" stew, is also moving forward. This presentation details initial planning, including why smaller haddock was chosen as the first target fish and why a value-added product – chowder – emerged. Implementation discussion includes how industry partnerships were created, pricing, and infrastructure challenges. Initial success resulting in almost one million chowder servings sent to food banks and pantries across New England (and beyond) is cataloged. Key next steps for sustainability and diversification, as well as challenges encountered in bringing products into retail, wholesale, and food service systems are explored. Efforts to engage the United States Department of Agriculture in supporting American-based fishing industry effort, along the lines of support already in place for beef, pork, and poultry suppliers, are discussed, as well as efforts to engage major non-profits like Feeding America in these kinds of regional initiatives to support small-boat, independent fishermen. The Fishermen's Alliance believes that this program, both goals and execution, is replicable in other parts of the country and with other fish stocks and products. For 30 years, the Cape Cod Commercial Fishermen's Alliance has worked with small-scale, independent fishermen for a balanced ecosystem and sustainable fishing communities. We believe that a healthy marine environment is essential to the success of Cape Cod's fishing economy, and we know that better ways to manage our fisheries are needed to protect them. In addition, community engagement and support for our values and vision are crucial. This program aligns with our mission and advances our multiple goals.

COVID Impact on Massachusetts Seafood Value and the Rebound in 2021

Story Reed, Massachusetts Division of Marine Fisheries, Boston, MA

Preliminary data shows that the ex-vessel value of seafood landed in Massachusetts reached an all-time high of over $800 million in 2021. This is

a remarkable turnaround from 2020 when many segments of the seafood industry suffered significant revenue losses due to the impact on traditional markets caused by the COVID-19 public health emergency. For comparison to the $800 million, the 2020 ex-vessel value was $558 million and the five-year average (2015-2019) ex-vessel value was approximately $600 million. In recent years, sea scallops and lobsters accounted for approximately 70% of the ex-vessel value of seafood landed in Massachusetts. While quantities landed followed similar trends to previous years in 2021, these two species had consistently higher than average per unit prices through the year, resulting in them accounting for 79% of the total value of all species landed. The ex-vessel value of sea scallops and lobster reached all-time highs of approximately $500 million and $120 million, respectively. These drove the dramatic increase in total ex-vessel value. The presentation will include figures that illustrate the ex-vessel value landing trends described above. I'll also present some of the innovative ways that fishermen and seafood dealers marketed their seafood in 2020 during the pandemic.

Bringing Local Fish to the Community During the Pandemic

Peter Halmay, San Diego Fishermen's Working Group, San Diego, CA

Steven Scheiblauer, Monterey Bay Fisheries Trust, Monterey, CA

Early public responses to the pandemic resulted in the collapse of the usual avenues for seafood marketing. Typically, San Diego fishermen would sell mostly to resident buyer/processors, with some sales going direct to restaurants. Additionally, and of importance, was the established Tuna Harbor Dockside Market (THDM), an every-Saturday open air market at San Diego's Market Pier, which connects fishermen directly with the public for fresh sales. Very early in the pandemic saw sales at THDM double, then double again. Still, this sales vehicle was not nearly sufficient to keep the fleet fishing. The presentation will outline the steps the SDFWG took to enhance direct marketing, establish relationships with regional food banks and community foundations, train young chefs in seafood breakdown and teach the sustainability of US fisheries, feed the needy, and develop plans for a fisherman-run "fish house" to provide cold storage and other services to better enable direct-to-the-consumer marketing.

Pandemic Pivot Speakers: Curt Brown (Ready Seafood), Brianna Warner (Atlantic Sea Farms), Ian Mayo (Mayo Enterprises), Annie Tselikis (Maine Lobster Dealers' Association), Bill Mook (Mook Sea Farm), Matt Brown (SoPo Seafood), Jen Levin (Gulf of Maine Sashimi), Mike Gaffney (Eros Oysters), Patrick Arnold (New England Ocean Cluster), Thor Sigfusson (Icelandic Ocean Cluster), Ben Conniff (Luke's Lobster), Brian Langley (Union River Lobster Pot), Boe Marsh (Community Shellfish), Dianne Tilton (Downeast Institute), Samantha Tipton (Hannaford's Supermarkets), and Monique Coombs (Maine Coast Fishermen's Association).

Session B2

Location: Campus Center 3545

Theme: Innovative Solutions and Best Practices for Dependent Uses in Ports

Oral Presentations

Port Houston: Moving Landscape Environmental Benefits that Redefine a Port's Role in the Region

Natalie Beard, SWA Group, Houston, TX

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SWA, an urban design and landscape architecture firm led Port Houston's 2040 Plan in 2020. Port's 25-mile-long channel weaves through Galveston Bay and Buffalo Bayou to service over 150 private and public terminals, bringing with it nearly 1.2 million jobs and $265 billion in economic impact throughout the state of Texas, which represents nearly 16% of the Texas GDP. In the United States, Port Houston is ranked first in terms of imports, foreign waterborne tonnage, and export tonnage.Unlike other large port sites in the country, Port Houston is not compact- its landscape is distributed over a 30-mile-long chain of land areas only partially utilized for storage and active port operations. The majority of its vast open spaces are sites of redeposited dredge material, awaiting their ultimate development fate decades down the line. This unique capacity to actively and continuously make new land sets the Port apart in the way it physically changes its form and builds contextual relationship with the City and local ecology overtime. The presentation will focus on this unique geography and the beneficial uses of dredge material in Galveston Bay as the increasingly active working waterfront expands its operations with the widening and deepening of the Ship Channel made possible in part by federal funding of "Project 11". The economic benefits provided by the Houston Ship Channel and the commerce moving along it can have a cost in terms of environmental impacts. Port Houston continuously works with its partners to offset those impacts and implement positive solutions. Building on the success of using dredged material for beneficial uses, Project 11 aims to deliver new environmental benefits by creating: five bird islands providing up to 20 acres of new foraging and nesting habitat, three new marshes adding up to 8,000 acres to the coastal ecosystem, oyster reef pads establishing 376 acres of growth-enabling habitat.

Sustainable Ecological Enhancement of Port Infrastructure: Port of San Diego

Heather Weitzner, ECOncrete Inc. New York, NY

Ports are at the forefront of environmental challenges associated with climate change and coastal development. To adapt, ports are leveraging innovative technologies and sustainable business models to revolutionize environmental stewardship and coastal ecosystem protection. In 2019, under the framework of the Blue Incubator Program the Port of San Diego approved a two-year pilot project with ECOncrete, an ecological engineering company developing innovative bio-enhancing concrete infrastructure for the coastal, marine, and offshore industries. The main objective of the project was to develop a specific design to address the ecological enhancement of the riprap armoring protecting Harbor Island, with the primary goal of creating well-defined local ecosystems that mimic natural rock pools and provide for a favorable environment in which to develop an abundant and rich diversity of marine flora and fauna. The design of the ecological armoring unit was driven by existing data from ECOncrete's original tide pool unit which was originally developed in 2012, as well as numerous other units which have since been deployed in over ten different countries across 40 project sites. ECOncrete's technologies for enhancing the ecological value of fully structural concrete are based on three aspects: the materials composition, the surface texture, and the three-dimensional design. The combination of these three principles working in synergy has proved to achieve optimal results when combining ecological enhancement along with structural performance. Past experiences have proven that the enhancement of marine life results in the development of a "biological crust" that is formed by the calcitic skeletons of corals, sponges, mollusks, tubeworms and

similar species. In addition, this biogenic calcitic crust serves to protect the concrete structure. This form of bioprotection can reduce the magnitude and frequency of structural maintenance, which translates into improved ecological stability (reduced anthropogenic intervention), as well as a higher ROI (reduced maintenance costs). In 2021, in partnership with a local contractor, ECOncrete launched the installation of 74 interlocking single-layer COASTALOCK armor units across two riprap sites along the San Diego Bay shoreline - the first COASTALOCK installation worldwide. The interlocking units will provide structural, ecological and community engagement benefits, including carbon storage, and regeneration of local marine biodiversity. ECOncrete will conduct ecological and structural monitoring every six months for the first two years to evaluate the viability of the COASTALOCK system as an ecological armoring replacement to traditional riprap. Results from the pilot will demonstrate a trailblazing win-win approach to coastal protection by providing resiliency and adaptation strategies in an urban environment while simultaneously regenerating valuable marine life. Initial monitoring results are overwhelmingly positive, with the marine ecosystem thriving only months after successful installation, outperforming expectations. Monitoring results included 31 sessile species, ten mobile invertebrates, and four species of fish. In addition, dozens of juveniles of the Nudibranch Aplysia californica were found in the Coastalock cavities. With this project, the Port of San Diego and ECOncrete aim to provide an example of inclusive design for coastal protection and Port infrastructure which can be applied to urban, natural, and working waterfronts around the world.

The Town Docks of Narragansett Bay, Rhode Island

Richard Burroughs, *University of Rhode Island*, *South Kingstown*, *RI*

Town docks are municipally owned piers or wharves for transferring goods and people between land and sea, but they also create opportunities for access, recreation, and other shoreside activities. Here I focus on transitions in water dependent uses and related impacts on land uses adjacent to town docks. First, I inventory Narragansett Bay town docks. Second, I identify primary causes for transitions. Third, I consider the implications of these changes for the future. A survey of Narragansett Bay, Rhode Island shows that 13 of 17 communities have one or more town docks with one community having over 6 such facilities. In addition, two communities are served by state piers. Twenty-four percent of the communities on the bay lack a town dock. Narragansett Bay harbors participated in commercial fishing, coastwise and often international trade in the past. Historically, land uses adjacent to the docks included fish processing, chandleries, warehousing, and trading among the activities tied to water dependent uses. Town docks catalyzed year-round economies built on multiple professions. Post-World War II transitions for these waterfronts were driven by changing transportation systems, population growth, and rapidly increasing demand for recreational use, most recently spurred on by the covid pandemic. Recreational boat services, housing, bars, restaurants, and hotels began to predominate as land uses. The economies became more seasonal and focused on recreational jobs. The setting for town dock has moved from multiple water dependent uses to a narrower focus on recreation, a pressure that appears to be increasing. Since coastal municipalities have harbor plans as well as a local supervisory body to assist in management, they should be well positioned to respond to public interests and make them realities in town dock usages. Well organized constituencies of traditional water dependent users can influence emerging public-private partnerships for these land and sea spaces to preserve cultural heritage of the

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waterfronts.

Taking the Mystery Out of Seaport Operations: Discussion I & Discussion II (combined presentation)

James Fawcett, University of Southern California, Los Angeles, CA

Michael Liffman, Louisiana Sea Grant (Retired), Baton Rouge, LA

Christopher Petrone, Delaware Sea Grant, Lewes, CA

The twin (although institutionally separate and highly competitive) Ports of Los Angeles and Long Beach are the busiest seaport complex in the United States. However, post 9/11 they have become more off-limits to the public for understandable security reasons. Nevertheless, the ports were never especially accessible to the public although from a high vista in the hills above the Port of LA, one could look down and see their operation. The isolation imposed by COVID, provided a much needed opportunity to provide a public perspective on port operations through a series of monthly essays discussing a wide variety of single issues that characterize activities in the seaports ranging from "Why are there two seaports side-by-side?" to "How did the two ports evolve?" and more technical topics on subjects like "What is the Marine Exchange of Southern California and Vessel Traffic Service and what does it do?" Recent articles have explained how container terminals operate and provided in another paper the provisions of the International Convention on Pollution from Ships, or MARPOL. Some have addressed history and are uniquely local in nature while others address issues common to many seaports both large and small. Essays are continually being added to the series and future topics will include discussion of historical communities in or near the ports, industries that rely upon a port location to conduct their businesses and new developments to provide public access to portions of the port. While the two provide hundreds of thousands of jobs in the southern California economy, they are located at the extreme southern coastline of Los Angeles County and unless the public has reason to visit either of them, they remain largely out of sight and out of mind. Nevertheless, about 40% of all marine freight entering the U.S. from all over the world enters these two mammoth entrepots and goods destined for all corners of the nation pass through them on a daily basis. The point of the essays is to educate the public about the diversity of maritime occupations and industries, some large and others small. Another is to expand their understanding of the role of ports so the next time they purchase a pair of sneakers or a can of tuna, they'll have a more sophisticated understanding of the supply chain and how many parts of the world are linked together to bring those goods to them.

Session B3

Location: Wheatley 1-004

Theme: Maritime Community, Heritage, and Culture

Oral Presentations

Restoration of the Historic MV Sail Fish

Rhonda Price, Mississippi Depart of Marine Resources, Office of Coastal Restoration/Resilience, Biloxi, MS

This presentation will start with an overview of the MSGCMHA grant program and how it is assisting small nature based businesses with conservation tools (historic tax credits, NPS National Register Nominations) and business recognition programs

(GulfCoast Outpost), using the restoration of the M/V Sailfish as a successful example. This presentation will provide a historical overview of the vessel including the restoration process and the value of restoring historical fishing vessels by diversifying commercial fishing with tourism opportunities. Funding by the Mississippi Gulf Coast National Heritage Area's (MSGCNHA) Heritage Community Grant program to provide physical restoration to historic marine vessels within the MSGCNHA. Funds help finance the repair and restoration of the M/V Sailfish located at the Biloxi Small Craft Harbor in Biloxi, Mississippi under the guidance of a Master Boat Builder. The vessel is not only important for its architectural character as well as its historical association with the commercial tourist trade, but the restoration of the vessel provides an economic benefit to the harbor and surrounding businesses by showcasing wild Gulf coast seafood. The M/V Sailfish is a forty-foot open wood hull vessel dedicated to providing cultural and ecological tours of Biloxi's shoreline. The excursion focuses on the area's ecological, scenic and cultural resources by providing educational insight to the economy that made the coast at one time, the Seafood Capital of the World. The developed business model provides an opportunity to view Biloxi's harbors, seafood factories, and commercial fishing as well to learn about the importance barrier islands provide to storm resilience and a healthy ecosystem. The current owners, Biloxi Cruise Company, LLC, have been instrumental in pursuing conservation methods to restore the M/V Sailfish to its glory days while working within the guidelines of the Coast Guard to keep her seaworthy. The restoration of the vessel can be used as a conservation tool to others so that historic vessels can be successfully restored and continuously operated. The vessel has survived several major hurricanes including Betsey in 1965, Camille in 1969, Georges in 1998, and Katrina in 2005, as well as environmental and economical disasters such as the 2010 BP Oil Spill. Mississippi Gulf Coast National Heritage Area's Management Plan identifies the preservation of both the seafood and shipbuilding industries resources as critical parts of the area's heritage. The restoration of the M/V Sailfish and its continued operation would significantly contribute to the goal of conserving the area's heritage resources and present a platform from which to educate the public about them.

Aquatourism as a Tool to Diversify Working Waterfronts: The Maine Oyster Trail Case Study

Afton Vigue, Maine Aquaculture Association, Hallowell, ME

Jaclyn Robidoux, Maine Sea Grant & University of Maine Cooperative Extension, Brunswick, ME

The Maine Oyster Trail was first launched in 2017 and was designed to educate consumers on oyster farming in Maine. In 2021, the Maine Oyster Trail was revamped by the Maine Aquaculture Association with support from Maine Sea Grant in response to the market shifts that resulted from COVID-19. In order to pivot during the early days of the pandemic when restaurants closed, many oyster farmers began selling oysters directly to consumers via roadside stands, farmers markets, and other direct sales channels. Others diversified their income by offering experiences such as farm tours and shucking lessons. The new Maine Oyster Trail features over 80 Maine oyster-related businesses and promotes the unique experiences they offer. In addition to serving as a guide for oyster enthusiasts, the Trail works closely with farmers to provide the tools and support they need to explore new business opportunities through tourism. The Trail is the first interactive, incentive-based oyster trail in the U.S. The Trail's interactive trip planner allows users to build their own custom trail based on different types of experiences and regions they're interested

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in checking out. While users travel the Trail, they can use the oyster passport function to check-in at participating businesses, track their visits, and complete challenges to earn Maine Oyster Trail swag. One year into the launch of the new Trail, we are continuing to gather quantitative and qualitative data that illustrate the impact the Trail has had on Maine's aquaculture, tourism, and working waterfront economies. We've seen travelers book entire vacations to Maine for the sole purpose of visiting business on the Trail. Folks from Maine, New England, and states as far away as Florida, Wisconsin, and California have come to Maine and participated in Trail activities. Trail-goers have continued to purchase Maine oysters after their vacations by having them shipped to their homes across the country. We also have exciting evidence that experiences on the Trail have helped generate positive public perceptions around aquaculture. A new report from the Island Institute on the state of Maine's working waterfronts notes that "those who flock to our shores to consume lobster and steamers, to visit our oyster trail, who stand mesmerized as they watch fishermen unload their catch" are bringing millions in tourism dollars to our state. We are eager to share data on the impact of the Maine Oyster Trail with our working waterfront colleagues and believe this to be a promising model which can be replicated in many other states.

Legal Turning Points Related to Boston's Waterfront Governance 1620s-1970s

John Duff, UMass Boston, Boston, MA

Boston's transition from a town to an incorporated city in 1822 reminds us that the coastal communities that have lived and tied their livelihoods to what we now know as the Boston shoreline have done so for centuries. And we would do well to reflect upon the reality that these waterfront regions were worked by indigenous communities for millennia prior to the arrival of western European settlers. There is considerable ground that remains to be researched when considering how, when and by whom these 'worked waterfronts' changed over time. This presentation examines the three and a half century time frame from the 1620s to the 1970s. This period begins as Europeans, drawn to calm and sufficiently deep waters, steered ships to the edge of the Shawmut peninsula and culminates with the stark reality that the life of our aquatic ecosystems, upon which human societies depend, can be imperiled by unchecked growth and development. The lens that we apply to this period is one of legal history. Our research indicates that the growth of Boston's waterfront has been driven by legal 'moments' directing and then redirecting the area's shoreline evolution. Some of these moments are familiar to attentive observers of the region's history, including Boston's incorporation as a town in 1630 and the colonial ordinances of 1641/7 that set forth a set of legal principles regarding the balance between public access and private ownership rights at the water's edge. Other moments, such as July 4, 1776, may remind many of notions of independence. But as we note, the declaration issued that day included an articulation of how intertwined the lives of "our people" were tied to "our seas … [and] our Coasts." Key nineteenth century moments include the 1866 enactment of the Public Waterfronts Act in Massachusetts and the federal Rivers and Harbors Act of 1899, each of which, in their own way, conditioned our use of waterways with some level of stewardship. Important twentieth century moments include the Commonwealth's creation of a board of port directors charged with charting course for the development of the Port of Boston. While short-lived, that law and the administrative body it created shined a light on the importance of establishing an entity with jurisdiction and resources devoted to informed port planning and management. We round out this presentation with an assessment of the

1970s as a crucial juncture point when a collection of federal laws including the Coastal Zone Management and the Clean Water Act set forth standards and strictures that would emphasize the need to reflect upon 'water-dependent' activities and the priority placed on restoring and maintaining the 'integrity" of the nation's waters including historically heavily impacted harbors like Boston's. We sum up this three-hundred-fifty-year chapter of Boston's working waterfront history by highlight the reality that ever-growing and increasingly demanding human societies would do well to examine the historical, ecological, economical, and legal insights of the past to better inform a sound future for the harbor and the many services it provides.

How do Coastal Protection Policies of the Past Impact Climate Adaptation?

Courtney Humphries, UMass Boston, Boston, MA

Adapting urban waterfronts to increasing flood risks from sea level rise and storms will require new infrastructure to protect the shoreline, and many cities are in the process of studying, designing, and implementing flood protection systems. Some of these designs involve filling areas of the shoreline to create new land as a cost-effective way to protect existing neighborhoods and municipal infrastructure, and as part of nature-based flood protection systems. But current regulations are designed to preserve the existing shoreline and are highly restrictive of altering shorelines with fill. Nature-based flood protection also potentially conflicts with traditional water-dependent uses of the waterfront, which are also protected through current regulations. This research examines the tension between climate adaptation and waterfront regulation through a qualitative case study of Boston, Massachusetts, and raises questions about how the current regulatory regime impacts the 'adaptability' of urban shorelines in the future. It reviews how laws, regulations, and permitting processes at the federal, state, and municipal levels constrain the use of shoreland fill, and draws on planning documents and interviews with a range of waterfront stakeholders to understand how these restrictions are shaping the planning and implementation of climate-adaptive shorelines. The study finds a widespread consensus that waterfront regulation must change in order to promote climate adaptation, but also identifies conflicting visions and values for the future waterfront and questions that should guide future discussions about regulatory change.

Tourism Development and Promotion: Utilizing Shipwrecks, Coastal Tourism, and Maritime Heritage as Economic Development Tool

Joseph Lucente, Ohio State University & Ohio State College Program

Background: More than 1,700 shipwrecks lie at the bottom of Lake Erie; the most of any of the Great Lakes. Of those, 277 have been found. Ohio was the only Great Lakes state without a formal state sponsored program to educate people about its rich maritime heritage and need to protect and preserve its shipwreck resources. Objectives: Ohio Sea Grant created a comprehensive website and interactive computer kiosks designed to help Ohio residents and visitors locate and learn about the many historical, cultural, and recreational shipwrecks in Ohio's Lake Erie waters, and to promote coastal tourism and business development. The kiosks and website highlight known, popular shipwrecks in four separate sectors of Ohio's Lake Erie shoreline: The Erie Islands Trailway, Vermilion-Lorain Trailway, Cleveland Trailway and Fairport Harbor Trailway. Methods: The goal of this project was the development of a website and computer kiosks deployed at four Ohio coastal areas that were designed to help Ohio residents and visitors

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locate nearshore recreational shipwrecks and unique underwater habitats in Ohio's Lake Erie waters. Both products effectively serve to promote cultural and ecotourism as tools to expand Lake Erie tourism revenues. Results: This effort has increased coastal economic impact by elevating direct visitor spending, creating new job opportunities, and increasing local and state tax bases attributed to visitor spending. Promoting Ohio's rich maritime heritage established partnerships with the Ohio Office of Coastal Management and eight coastal County Convention and Visitor Bureau's in developing and implementing plans to promote cultural and coastal tourism. In addition, Lake Erie's Coastal Ohio Program and the Lake Erie Circle Tour benefits through the establishment of linkages to the four designated underwater trailways. Both the website and kiosks highlight known, popular shipwrecks in four separate sectors of Ohio's Lake Erie shoreline. This effort has increased coastal economic impact by elevating direct visitor spending, creating new job opportunities, and increasing local and state tax bases attributed to visitor spending. Evaluation and Conclusions: It is estimated that over five million potential contacts were made via radio, internet, and news media for this project according to media outlet distribution numbers. Google analytics is being used to record the number and frequency of visitations to the web site. In 2020, over 1,000,000 hits were recorded 74% of visitors adding the site to their "favorites" as a relative indicator, proving to be a highly visited site for information, outreach and education.

Session B4

Location: Wheatley 02-198

Theme: Commercial Fisheries and Aquaculture

Oral Presentations

Tools for a Vibrant and Resilient Working Waterfront: A Harbormaster's Perspective

Michael DiMeo, Town of Marshfield, Marshfield, MA

Located on the south shore of Massachusetts, the town of Marshfield supports a diverse range of waterfront and waterway uses which are a focal point for the community. In particular, Green Harbor is one of the top ports in the state for American Lobster and Atlantic bluefin tuna landings, and is home to an active fleet of approximately 50 commercial vessels. Recreational boating is also popular in Marshfield, which is home to six marinas, two yacht clubs, and 300 town-managed moorings. Managing these uses requires careful planning, broad communication, the ability to raise funds, and the means to respond as conditions change along the waterfront. This presentation will provide a harbormaster's perspective on the many tools and strategies available to support harbor and waterway users--with a focus on commercial fishing and the related infrastructure, navigation, and climate challenges present in Marshfield.

Projected Infrastructure, Revenue and Resource Losses to Louisiana Fisheries from the Hurricanes of 2020 and 2021

Rex Caffey, Louisiana State University AgCenter & Louisiana Sea Grant

From August 27, 2020 to August 29, 2021, four Hurricanes (Laura, Delta, Zeta, and Ida) made landfall in coastal Louisiana, causing major destruction to a region of national importance for domestic fisheries and seafood production. In response to these storms, numerous efforts were initiated by public and private entities to provide humanitarian aid and basic commercial necessities. As part of an ongoing effort to assist the state in the documentation of economic impacts, this study was initiated to provide a detailed

examination of the storms' impact on fisheries infrastructure, revenue, and biological resources. The analysis is based on an expansion of spatial impact assessment methods established in the wake of previous storms. Business addresses, obtained from state licensing and permitting records, were geocoded for 8,503 firms representing five marine sectors (commercial fishing vessels, seafood dealers, seafood processors, charter operations and coastal marinas). Economic valuation of individual businesses was based on firm- and industry-level revenue data within established methods of income capitalization and market-based appraisal. All business location and valuation data were integrated into a geographic information system and combined with highly detailed estimates of maximum surge height and wind speeds for each storm at each firm location. Sixteen survey-derived damage functions were developed and applied to geocoded firm- and storm-data to produce geographically specific estimates of damage to coastal fisheries infrastructure and estimates of annual revenue loss. The following points contain select findings from the analysis.

Small Footprint, Large Impact: The Effects of Working Waterfront on Coastal Communities

Chad Strater, Sea Meadow Marine Foundation, Yarmouth, ME

Much of what we love about Maine is our rugged coast and it's hard-working, historic communities, tucked in those craggy inlets. There you can find families that have resided and worked on the waterfront for centuries. However, of our 3,400 miles of coastline, the working waterfront has been whittled down to only 21 miles, which includes such enterprises as fishing, aquaculture, boat building, and boatyards. Now, even that small remaining waterfront, which employs many hard-working Mainers, is threatened by growing residential real estate markets, lack of affordable housing for workers, lack of good paying jobs in marine trades, and a lack of understanding of the connection to the community. Our goal is to preserve and expand Maine's working waterfront. I would like to talk a little bit about what we have done with a small yard in Yarmouth, Maine and the vision we have for ensuring this yard has the tools for a resilient future. I think that telling the story of how we found this project, and the fits and starts of getting this off the ground should be entertaining and informative and I ought to be able to sum it up in 20 minutes. We have dozens of families who are impacted in a huge way by this small piece of soggy land and we would like to continue that tradition through education and outreach. With any luck we will create a model and resources that can be used by other waterfront communities.

Seaweed Aquaculture in Maine: A Decade of Innovation and Development on Maine's Working waterfront

Jaclyn Robidoux, Maine Sea Grant & University of Maine Cooperative Extension, Brunswick, ME

Within the past decade, Maine has emerged as a leader in U.S. seaweed production, with a growing number of commercial farms, significant developments in supply chain and markets, and increases in landings, investments, and infrastructure. In 2010, Maine had a single kelp farm and an undeveloped supply chain, serving local markets and conducting preliminary investigations into value-added processing and products. A decade later, Maine has over 30 commercial kelp farms, 3 native species under cultivation, significant growth in acreage and landings, diverse and expanding processing operations, and a viable supply chain. The rapid growth in Maine's emerging kelp sector has been enabled by an organized permitting

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process, a well-established maritime workforce and infrastructure, and coupled processor-product producer businesses that contract kelp from farmers and work with wholesalers and retailers to reach end consumers. Most of Maine's kelp farmers come from fishing and marine backgrounds, and seek to diversify their incomes and businesses on the water. Continued research and investments in seaweed production systems, processing infrastructure and technology, and new markets are critical to advancing the emerging seaweed sector in Maine and the U.S. Seaweed continues to be extensively explored as a versatile, sustainable crop, as well as an aquaculture product with environmental co-benefits to cultivation, including improvement of water quality, uptake of excess nutrients, and capture and sequestration of carbon dioxide. Maine's growing seaweed industry is well-positioned to tap into these emerging opportunities and incorporate seaweed and seaweed products into revenue streams alongside traditional fisheries.

Understanding Shoreside Infrastructure Challenges in the Massachusetts Summertime Fluke Fishery

Rachel Bratton, UMass Boston, Boston, MA

Massachusetts has a robust summertime commercial fluke fishery in the waters south of Cape Cod, primarily Nantucket Sound. Despite a sustainable resource and a significant increase in the available quota, landings have nearly halved over the past 10 years, declining from over 700,000 lbs. in 2010 to less than 400,000 lbs. on average since 2017. The number of active permit holders has steadily decreased over the same period, with only about 25 boats remaining active in the dragger fleet. It is unclear if this is the result of policy changes or increased competition for port infrastructure from competing user groups on the waterfront. This study sheds light on the causes of declining participation using a combination of research methods, including a web survey of commercial fluke permit holders, individual and group interviews, and analysis of infrastructure changes at critical ports on Nantucket Sound. Results reveal concern over access to a working waterfront capable of sustaining the commercial fluke fishery, with commercial fishermen citing a reduction in the availability of dockage and offloading facilities, as well as higher associated fees, as the primary obstacles to their continued participation. These findings will inform future management decisions, addressing critical needs in the industry as identified by fishing communities.

Session B5

Location: Wheatley 2-0200

Theme: Climate Change Adaptation

Oral Presentations

Marine energy, Communities, and Maritime Economies: Connecting Stakeholders in a New National center

Linda D'Anna, Coastal Studies Institute, Wanchese, NC

There is a vast, and largely untapped, marine energy resource in close proximity to working waterfronts and coastal communities - the movement of water in ocean waves and currents. A small but diverse group of researchers, developers, and entrepreneurs around the world are actively exploring how to harness this energy for utility-scale and off-grid applications, including to provide power for marine/blue economies. We are among them. The Atlantic Marine Energy Center (AMEC) is the fourth national marine energy center established by the Department of Energy as a University-led consortium to address ongoing needs for research, development, and testing in support of marine

energy. One of the cross-cutting elements of AMEC is stakeholder engagement. Our research group wants to hear from stakeholders in working waterfronts, coastal communities, and maritime businesses and industries who could benefit from and/or be neighbors to marine energy installations. We want to know: Who are you? What is your stake in marine energy? What interests you? What are your concerns or questions? In this interactive talk, we will ask conference participants about their interests surrounding marine energy. We will also share information about AMEC and a sampling of the diverse research projects led by AMEC University researchers from the University of New Hampshire, Lehigh University, Stony Brook University, and the UNC Coastal Studies Institute on everything from marine foundations to energy storage to supply chains. We are beginning to build connections and facilitate exchange across the "AMEC universe" of researchers, working waterfronts, coastal communities, marine energy developers, maritime economies, and other stakeholders. Dive in with us!

Making the Case for Climate Action

Erin Perry, Cape Cod Commission, Barnstable, MA

Cape Cod is already experiencing impacts from climate change that are likely to worsen in the coming decades. With over 500 miles of both naturally rich and heavily developed coastline, the region is at risk from the destructive impacts of increasingly intense coastal storms, extreme precipitation, and flooding and erosion, all of which rising sea levels will only exacerbate. These risks will have not only physical ramifications, but economic ones as well. To develop a regional climate action plan that effectively addresses those risks, the Cape Cod Commission worked with Eastern Research Group and Synapse Energy Economics to better understand the economic impacts of climate change. The analysis, which included estimating losses associated with inaction, modeling greenhouse gas emissions scenarios to understand the magnitude of changes needed and identifying the costs and benefits of various adaptation and mitigation strategies, provide data and information necessary to inform meaningful climate action on Cape Cod. Without action, the impacts on the economy, communities, and resources of Cape Cod will be severe. The analysis estimated that adapting the coast to sea level rise and storm surge could avoid a potential $50 billion in losses resulting from damaged roads, residential real estate and economic assets, lost tax revenue, reduced beach tourism, and decreased land value through 2100. In addition, the region's ecosystems and the services they provide, and industries across sectors, are also subject to devastating and costly impacts. This presentation will summarize the results of the economic impact analysis, including those associated with infrastructure, building damage, tourism, ecosystem services, and regionally significant industries, among others. It will also describe how that information was used, together with data on projected climate impacts and regional greenhouse gas emissions, to develop the Cape Cod Climate Action Plan - a framework for action that recognizes both adaptation and mitigation strategies as critical paths toward achieving climate action goals. Empowered with information necessary to make the case for climate action, a variety of actors, including county and municipal governments, homeowners, business owners, and others can catalyze climate action for a more resilient Cape Cod.

ResilientWoodsHole: Demonstrating the Power of a Private-Public Blue Economy Village Partnership in Implementing Community Climate Resiliency Solutions

Leslie-Ann McGee, Woods Hole Oceanographic Institution, Woods Hole, MA

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Led by Woods Hole Oceanographic Institution (WHOI), ResilientWoodsHole is a collaboration between the major science institutions and key local stakeholders including the business community, the residential community and the Town of Falmouth with a primary focus of ensuring the vibrant and productive village of Woods Hole prospers with the advent of major climate impacts and associated threats and challenges. It is the be the Commonwealth's first multi-stakeholder, private-public partnership in community resiliency implementation. Direct access to the sea is fundamental to each institution's mission and threats from increasing sea levels and more frequent and intense storms are existential. WHOI is the largest private, non-profit oceanographic institution in the world. WHOI employs over 1,000 scientists, engineers, technicians, seafarers and administrators and hosts another 450 affiliates including graduate students, post-doctoral scholars and interns. WHOI's Woods Hole Village Campus includes waterfront laboratories, shops, a major dock facility that serves as the homeport for two global-class oceanographic research vessels and a growing and vibrant innovation and marine robotics operation. WHOI anchors the local "blue" science and technology economy. And, its working waterfront is located in the only deep-water port on all of Cape Cod. Studies and analysis have shown that much of Woods Hole is vulnerable for residents, businesses, lifelines such as the ferry and the enormous economic throughput from Woods Hole. By pooling resources, intellectual horsepower and management skill – with strategic management by the Institutions - the stakeholders are maturing the newly formed ResilientWoodsHole Initiative. The overall goals of ResilientWoodsHole and the work proposed here are threefold: (1) The local, regional and state-wide institutional business assets and economic contributions in Woods Hole have a proactive phased implementation plan for continued operations for the next 80 years; (2) Ocean science, marine technology, scientific discovery, commercial fishery assessments and innovation in Woods Hole can flourish well into the next century with a thoughtful incremental/ adaptive strategy for protecting assets and access, and (3) Woods Hole community members and Falmouth local government are supportive of necessary actions of community-wide and site-specific infrastructure adaptations and regulatory accommodations to limit risk of exposure from the impacts of flooding and erosion. This presentation will demonstrate the power and process of a private organization with a regionally and globally significant working waterfront that has site- and asset-specific plans paired with local and critical life-line plans to address, rather than admire, the coastal climate vulnerabilities that could sink the Institution.

Blue Economy and Climate Resiliency Initiatives at the Port of San Diego

Margaret Pilaro, Port of San Diego, San Diego, CA

The Port of San Diego is a long-time champion and catalyst of the region's blue economy with its shipbuilding, commercial fishing, marine research, cruise, and cargo business lines. In late 2015, the Port created an Aquaculture and Blue Technology Program to explore new blue economy opportunities to further its core mission, diversify its portfolio of sustainable business lines, and strengthen its collective economic impact. Within this program, the Port also established a Blue Economy Incubator and strategic investment fund to assist in the creation, development, and scaling of new business ventures in and around San Diego Bay, focusing on aquaculture and blue technology. The incubator represents a launching pad for innovative projects by providing pilot project facilitation, key assets and services such as permit-ready infrastructure, entitlements, market access, and strategic funding. With a focus on building a sustainable portfolio of new businesses and partners, the Port of San Diego delivers multiple benefits to the community such

as fisheries enhancement, ecosystem restoration, carbon sequestration, climate resiliency, water quality improvement, shoreline stabilization, maritime security, and environmental monitoring. This presentation will provide a virtual tour of the Port's Blue Economy Incubator portfolio, an overview of our climate resiliency and nature-based solutions efforts, as well as highlight the critical role that Ports are increasingly playing in sustainable development within the Blue Economy.

Concurrent Sessions C1-C5

TUESDAY, JULY 19, 3:10 PM - 4:50 PM

Session C1

Location: Campus Center 3540

Theme: Waterfront Infrastructure

Greening the Blue Economy with Nature-Based Coastal Resilience

Panel

Gabriel Cira, The Emerald Tutu

Kannan Thiruvengadam, Eastie Farm

Louiza Wise, The Emerald Tutu

Tanya Hahnel, East Boston CDC, Boston, MA

Bianca Bowman, GreenRoots, Chelsea, MA

John Walkey, GreenRoots, Chelsea, MA

The purpose of this panel is to provide a discussion on the development of community-based regenerative marine agricultural production, specifically focused on how it might form as a companion to district-wide nature-based solutions for coastal resilience. The panel members and content will be centered around one of Boston's most vulnerable and historically marginalized communities of East Boston. As an Environmental Justice neighborhood, East Boston has a history of carrying a disproportionate environmental burden, especially when considering the industrial working waterfront. The area has also served as an archetype for the broader societal crisis of poor urban planning as it faces many challenges resulting from gentrification and discussions of re-industrialization. As these changes occur in conjunction with rising sea levels and increasing threats from climate disasters, more creative and community-conscious solutions are needed. One such solution presented here is the concept of a cooperative blue-green economy supporting the development of nature-based resilience. This panel will be organized by The Emerald Tutu, an NSF-funded research project working to design and implement biomass-based coastal protection infrastructure for urban areas such as Boston. It will feature leaders from other local organizations such as the East Boston Community Development Corporation, Eastie Farms, The Harborkeepers, and GreenRoots. This network of local partnerships will discuss a pathway to developing the modern working waterfront: one that works for the economy as well as the health and safety of the local residents.

Session C2

Location: Campus Center 3545

Theme: Maritime Community, Heritage, and Culture

Finding Balance, Co-Benefits and Productive Tension in New England's Heritage Working Waterfronts

Panel

Zoë Mueller, Utile Design, Providence, RI

Matthew Litell, Utile Design, Boston, MA

Technological change, globalization and just-in-time logistics together have created a series of pressures on older, smaller working waterfronts throughout the US - these pressures have simultaneously encouraged many traditional industries to consolidate to fewer, larger waterfront sites and pushed many traditional waterfront industries inland. For New England's small-parcel traditional working waterfronts, many of which face significant flood risk and have complex and multi-layered state-level regulatory tools to protect the public interest and preserve industry, this has created a particularly pressing challenge to simultaneously adapt to

rapidly changing economic conditions while working within the longer time frame of state and federal level regulatory approval processes. Through case studies of four New England cities, this session will explore how communities are navigating these pressures while honoring and preserving the maritime identities that make them unique and beloved by residents, business owners and visitors alike. The case studies included in this session are: Salem, MA; New Bedford, MA; Gloucester, MA and Norwalk, CT. Each of these working waterfront communities' traditional industries are fighting to remain viable and vibrant in the face of slim margins, increased competition and the urgent need to address deferred maintenance and incentivize large-scale infrastructure reinvestment. Through these case studies we will explore how these traditional working waterfront communities that emerged in response to early industries like boat building, fishing and shellfishing, raw material processing and power generation are making strategic adaptations rooted in four interconnected goals: (1) prepare for increased flood-based operational interruptions and property damage, (2) welcome new and emerging 21st-century off-shoots of their traditional industries such as offshore wind, marine life sciences and electronics, and low-impact hybrid cold-chain vessel prototyping; (3) honor, protect and drive reinvestment into the traditional industries that define the identity and character of the community; and (4) enhance public access, improve ecological health and elevate urban design to drive critical resident, visitor and tourist economies with the potential to cross-subsidize traditional industries. Through these four case studies we will explore how communities are striving to find balance, co-benefits and productive tension between these four goals.

Session C3

Location: Wheatley 1-004

Theme: Commercial Fisheries and Aquaculture

Maine's Working Waterfront Access Protection Program - Lessons in Innovation through Coastal Land Preservation for Tomorrow's Marine Economy

Panel

Hugh Cowperthwaite, Coastal Enterprises, Inc., Brunswick, ME

Melissa Britsch, Maine Department of Marine Resources, Augusta, ME

Laura Graham, Department of Agriculture, Conservation and Forestry Land for Maine's Future, Augusta, ME

Dave Dickison, Sea Meadow Marine Foundation, Yarmouth, ME

Waterfront access for Maine's commercial fishermen and aquaculturists continues to be a pressing issue. Property values, property taxes and the rising costs of doing business on the coast are contributing to the conversion of commercial fishing properties for residential use. To reverse this trend, in 2005 Maine designed and created the Working Waterfront Access Protection Program (WWAPP). The program was designed to invest state dollars in "economically significant" working waterfront access projects along Maine's coast by purchasing the future development rights (by way of a "working waterfront covenant") from willing sellers to assure that a property will remain in commercial fishing and aquaculture use in perpetuity. Projects are selected through a competitive application process,

Concurrent Sessions C1-C5

TUESDAY, JULY 19, 3:10 PM - 4:50 PM

a 1:1 dollar match is required, and the state of Maine retains a "right of first refusal" if the property is to be sold on the open real estate market. Representatives from Coastal Enterprises, Inc, the Maine Department of Marine Resources, the Land for Maine's Future Program and a successful program applicant will comprise a soup to nuts panel presentation of the program. The goal of the presentation will be to share with other states and interested parties the experiences, challenges and lessons learned that Maine has had developing this "first of a kind program". The presentation will also include a brief overview of program inception, an in-depth focus on program criteria, program materials, the application process, the development of multiple projects with various components. Overall historical impacts to date will be highlighted through project examples.

Session C4

Location: Wheatley 02-198

Theme: Waterfront Industries

Sea Grant's Role in Offshore Wind Energy Development

Roundtable Discussion

Gwendolyn Gallagher, New York Sea Grant, Stony Brook, NY

Jennifer McCann, University of Rhode Island Coastal Resources Center and Rhode Island Sea Grant, Narragansett, RI

Claire Hodson, Rhode Island Sea Grant, Wakefield, RI

Katy Bland, NERACOOS & New Hampshire Sea Grant, Portsmouth, NH

Offshore wind energy (OWE) development is rapidly accelerating in the United States as the federal and state governments push to achieve zero-emission energy goals. Currently, the United States has only two operational offshore wind farms, Block Island Wind Farm and Coastal Virginia Offshore Wind Pilot, which together generate 42 MW of energy. There are an additional 26 active leases that have the potential to generate over 40,000 MW of power for 11 states. This rapid offshore wind development requires interdisciplinary coordination to quickly advance port infrastructure, the supply chain, grid capacity, and workforce development. Additionally, further research and dissemination of information about impacts on fisheries, socio-economic impacts on coastal and fishing communities, environmental impacts, and opportunities for mitigation are needed. The large scope of offshore wind development intersects with Sea Grant's mission and focus areas – from impacts on coastal economies and fisheries mitigation to the effects of development on healthy coastal ecosystems. There is a real opportunity for Sea Grant to support increased public engagement at the federal, state, and local levels, coastal health monitoring, and conversations about green energy and environmental justice in coastal communities. Join New York, Rhode Island, and New Hampshire Sea Grant Programs and the National Sea Grant Offshore Wind Energy Liaison for a roundtable discussion about how Sea Grant is applying its core strengths and diverse network capacity to contribute to the nation's offshore wind development sector. In this session, each co-presenter will share how their Program is working to provide targeted technical support and outreach to key stakeholders including the fishing community, municipalities, working waterfront communities and government. Additionally, the co-presenters will discuss how they are maintaining Sea Grant's mission of serving as a neutral and science-based entity while extending research that allows stakeholders to make more informed

decisions on issues related to offshore wind. Finally, we will engage the audience in a roundtable discussion about how Sea Grant can enhance this role through partnership expansion and responding to other OWE stakeholder challenges and opportunities.

Session C5

Location: Wheatley 2-0200

Theme: Climate Change

Resilient Working Waterfronts II: Opportunities and Challenges in the Northeast and Beyond

Roundtable Discussion

Elisabeth Hamin Infield, UMass Amherst & the Northeast Center for Coastal Resilience, Amherst, MA

Karen Whelan-Berry, UMass Amherst, Amherst, MA

Katherine Kahl, UMass Amherst Gloucester Marine Station, Gloucester, MA

Stratton Lloyd, Essex County Communicty Foundation, Essex County, MA

Kirk Bosma, Woods Hole Group, Bourne, MA

Paul Kirshen, UMass Boston, Boston, MA

This Roundtable Discussion focuses on understanding what challenges communities and working waterfronts face related to climate change and how experiences can be shared to make the transition more equitable, adaptive, and resilient. This Roundtable offers a highly participatory opportunity for attendees to engage and reflect on the challenges to resilience in the working waterfront and share lessons for success. We begin with 3-minute presentations from a diverse set of practitioners and academics associated with the Northeast Center for Coastal Resilience (NCCR), which is located within the UMass system. NCCR is a developing initiative intended to launch a knowledge hub and support the resilience of working waterfronts in the Northeastern US. The session then directly moves to small group break-outs with report-back on key questions posed by the panelists, followed by a discussion of participant successes. Examples of questions include: • How will climate change affect the working waterfronts of coastal New England and elsewhere, and what are the key uncertainties? • What information, data, or support do coastal communities and working waterfronts need to be prepared for and equipped to respond to climate change? • What successes have participants had in promoting resilience in their work or research? • What are the best practices for sparking private-public partnerships and meaningful stakeholder engagement?

Concurrent Sessions D1-D5

WEDNESDAY, JULY 20, 10:30 AM - 12:00 PM

Session D1

Location: Campus Center 3540

Theme: Waterfront Industries

New England's Working Waterfronts – Adapting to Change

Panel

Betsy Nicholson, NOAA Office for Coastal Management, Gloucester, MA

Kathleen Leyden, Maine Coastal Program, Hallowell, ME

Lisa Engler, Massachusetts Office for Coastal Zone Management, Boston, MA

Jeff Willis, RI Coastal Resource Management Council, Wakefield, RI

Brian Thompson, CT Land & Water Resources Division & Coastal Program, Hartford, CT

For nearly 20 years, the Northeast Regional Ocean Council (NROC) has convened New England states and federal agencies in a volunteer partnership to identify common coastal and ocean challenges that require a larger scale, regional solution. NROC is an established leader in understanding the increased demand for ocean-based activities and the challenges that poses when those activities come to shore in our ports. Rep Pingree and Rep Whitman reintroduced legislation, "Keep America's Waterfronts Working Act," to support coastal communities grappling with the climate crisis and preserve the character of coastal communities by protecting jobs, commercial activities, and public access to America's coast. Each New England state faces different challenges, but Coastal Zone Management programs have the tools and the mandate to find the balance to achieve a sustainable economy, resilient shorelines and vibrant coastal communities with access to the waterfront. This panel presents an opportunity to hear directly from New England Coastal Zone Management leadership on their current challenges for large and small waterfronts across the region, including opportunities presented by new infrastructure funding. They will share their strategies for working with large and small ports, assistance to fishermen, changing industry profiles (fishing and aquaculture), delayed maintenance and dredge coordination, meeting the challenges of sea level rise, and development pressures such as offshore wind. This engaging discussion will help the audience understand what is needed to bolster our blue economy in this time of change.

Session D2

Location: Campus Center 3545

Theme: Climate Change

Working Waterfront Transitions: Lessons for Climate Adaptation from the Great Lakes

Panel

Tim Wagner, SmithGroup, Madison, WI

Adam Tindall-Schlicht, Port Milwaukee, Milwaukee, WI

Jenny Osburn, Indiana Department of Natural Resources Lake Michigan Coastal Program, Indianapolis, IN

Cory Mason, City of Racine, Racine, WI

The recent, rapid onset of historic high lake levels in the Great Lakes brought issues of waterfront adaptation into sharper focus – issues that saltwater coasts will be increasingly grappling with in the

coming decades. When faced with unprecedented conditions and new vulnerabilities, working waterfronts and waterfront communities often need to respond in ways that historically haven't been done or allowed. The question is can they? What kinds of policy, regulatory and design changes are needed so that working waterfronts can be more effectively and proactively renovated for climate change and resilience? How does this intersect with ongoing challenges already being faced by working waterfronts – including legacy pollution and conversion of former industrial and working spaces for public access and use? This expert panel will share valuable lessons learned and perspective gained over the past three years related to resilience challenges, regulatory and policy adaptation, funding, and recovery/capacity building in the Great Lakes, with a particular focus on Lake Michigan. SmithGroup Senior Coastal Engineer Tim Wagner will provide an overview on the elevated lake levels and coastal vulnerabilities being experienced in the Great Lakes – and the potential future preview this provides for other coastal communities. He will explore the key challenges as well as some of the innovative new approaches being taken in response to these unprecedented conditions, including unique public-private partnerships, collaboration with research and regulatory partners, and hybrid hardened/nature-based solutions. Port Milwaukee Director Adam Tindall-Schlicht will focus on the resilience challenges posed to port operations and key lessons learned regarding adaptive response and project implementation. A longtime employee of the Great Lakes-St. Lawrence Seaway Development Corporation at the U.S. Department of Transportation in both Washington, D.C. and Cleveland, Ohio, Tindall-Schlicht has significant experience in marine transportation, international marketing, and Great Lakes shipping. Jenny Orsburn, Program Manager for the Indiana DNR's Lake Michigan Coastal Program (LMCP), will share actions Indiana is taking to facilitate collaboration among waterfront communities, monitor and assess continued high-water impacts, and to plan and help implement solutions for shoreline resilience and hazard risk reduction, leveraging strong environmental data and effective stakeholder engagement. In addition to over a decade of work with IN DNR and the LMCP, she has served as the park superintendent for the City of Portage, IN.

Session D3

Location: Wheatley 1-004

Theme: Commercial Fisheries and Aquaculture

Direct Seafood Sales: Gaining an Understanding of Supply Chains and State Regulation

Panel

Stephanie Otts, National Sea Grant Law Center, University, MS

Joshua Stoll, University of Maine, Orono, ME

Amanda Gladics, Oregon State University & Oregon Sea Grant, Astoria, OR

The legal framework governing direct sales of seafood products is complex and can vary by state and even by city or county. Additionally, the laws may vary depending on the venue for direct sales (e.g., farmers' markets, online, restaurants) and means of sale (e.g., wholesale, retail stores, mail order). A firm understanding of the legal framework and the supply chain is therefore necessary to develop effective programming to support commercial fishers and aquaculture producers. There are several research projects under way to gain this understanding. The National Sea Grant Law Center is collaborating with the Local Catch Network to conduct a comparative analysis of state regulatory approaches to direct seafood sales

Concurrent Sessions D1-D5

WEDNESDAY, JULY 20, 10:30 AM - 12:00 PM

in support efforts to develop and implement best management practices. Joshua Stoll at the University of Maine is partnering with NOAA and the USDA to develop a national benchmark survey of direct seafood marketing practices in domestic wild-caught fisheries in an effort to strengthen food systems and coastal community resilience. This Breakout "Panel" Session will consist of a series of speakers discussing these ongoing efforts to increase understanding about the scope and scale of local and regional seafood marketing practices nationwide, and how these practices are regulated.

Session D4

Location: Wheatley 02-198

Theme: Waterfront Industries

Developing Synergies between Offshore Wind Energy and the Fishing Community: Reality of Myth?

Panel

Jennifer McCann, University of Rhode Island Coastal Resources Center and Rhode Island Sea Grant, Narragansett, RI

Ivana Lukic, s.Pro - Sustainable Projects GmbH/ SUBMARINER Network for Blue Growth EEIG, Berlin, Germany

Claire Hodson, University of Rhode Island Coastal Resources Center and Rhode Island Sea Grant, Narragansett, RI

With the increasing use of our working waterfronts, coasts, and oceans for activities involving offshore wind development (OWE), it has become increasingly critical to identify and implement strategies and actions that encourage synergistic, or multi-use, relationships between OWE resource users. Doing so encourages efficient spatial use of ocean and land-based facilities, bolsters economic gain for more resource users, minimizes conflict between resource users, and assists in the protection and wise management of our ocean and coastal resources. Multi-use, a strategic planning concept that encourages these synergies, is being embraced by the United Nations, the European Union, independent countries (e.g., Netherlands and Belgium), and in some cases the international development community. While the use of the strategy to respond to societal issues (e.g., food security, clean energy, transportation) and bolster blue economies is becoming more common around the globe, the United States has not readily engaged with this innovative and creative technique. As part of a Belmont Forum International Multi Frame Initiative, The University of Rhode Island is implementing a participatory process to determine how multi use between OWE and commercial and recreational fishing can be applied off the Northeast coast of the US. Specifically, with participation from key participants (Key Stakeholders) including Orsted, commercial and recreational fishing representatives, federal and state OWE regulators the Northeast Regional Ocean Council (NROC), and the Responsible Offshore Science Alliance (ROSA), the team is using the Bay State Wind lease block (off the Massachusetts coast - Commercial Lease #: OCS-A 0500) as a case study to determine how multi use approach can be integrated into the process – within the lease block, the working waterfronts, and the supply chain. Roundtable participants will have the opportunity to learn more about multi use and help the URI team strategize about how the Bay State Wind Multi Use case study and the United States overall could encourage more multi use while overcoming some of the identified obstacles and taking advantage of the opportunities.

Session D5

Location: Wheatley 2-0200

Theme: Innovative Solutions and Best Practices for Water-Dependent Uses

Planning for the Future: the 2024-2027 National Sea Grant Strategic Plan

Roundtable Discussion

Joshua Brown, NOAA National Sea Grant Office, Silver Springs, MD

Ana Sosa, NOAA National Sea Grant Office & Office of Education, Silver Springs, MD

Chuck Weirich, NOAA National Sea Grant Office, Silver Springs, MD

The National Sea Grant College Program is developing its strategic plan for 2024-2027. Sea Grant is a network of primarily university-based, federal-state partnerships whose mission is to enhance the practical use and conservation of coastal, marine and Great Lakes resources in order to create a sustainable economy and environment. For over 50 years, the Sea Grant has supported coastal and Great Lakes communities through research, extension and education. The 2024-2027 Strategic Plan will shape the investments the program makes in research, extension, and education. The National Working Waterfronts Network represents a cross-section of key Sea Grant partners and stakeholders, and we invite you to participate in an interactive, facilitated discussion on an early draft of our National Strategic Plan. Your feedback will help us shape priorities across our programs.

Concurrent Sessions E1-E5

THURSDAY, JULY 21, 11:00 AM - 12:30 PM

Session E1

Location: Campus Center 3540

Theme: Innovative Solutions and Best Practices to Water-Dependent Uses

How Do We Define, Monitor, and Protect Working Waterfront Infrastructure and Access for Commercial Fishermen?

Panel

Ben Martens, Maine Coast Fishermen's Association, Brunswick, ME

Jessica Joyce, Tidal Bay Consulting, South Freeport, ME

Josee Stetich, Greater Portland Council of Governments/Casco Bay Estuary Partnership, Portland, ME

The coastal economy is in a period of transformation. As new and old industries emerge, evolve, or grow along the coast, what is considered a working waterfront is rapidly changing. The catch-all term of "working waterfront" has limited NGOs, municipalities, and state agencies to properly identify or track access and infrastructure change for specific uses, and as such, those tasked with the management of working waterfront have been unable to develop the tools to protect access and infrastructure along the coast. In this session, we will discuss what the working waterfront specifically means to commercial fishing businesses and the variety of infrastructure on the waterfront that is necessary for the seafood economy to thrive. In order to identify solutions that are specific to the needs and concerns of coastal communities, defining working waterfront at the appropriate scale is a crucial first step in developing metrics to track change over time in working waterfront communities. In Maine, large wharves with 21st-century technology providing every advantage in supply chain logistics operate next to small docks that are often some of the oldest piers in town. Despite the cultural and economic importance of these areas to the fishing community, there are numerous threats looming over the working waterfront. Increasing pressure from new development, pandemic migration, changing ownership of properties, and user conflict in shared spaces are degrading infrastructure and access along Maine's coast. These issues are compounded by cumulative effects from sea-level rise, storm surges, and a lack of municipal and state capacity to institute appropriate zoning and regulations to preserve and maintain commercial fishing access. It is important that coastal communities lead the initiative to define and categorize working waterfront in order to appropriately address the needs of their own communities. Once this is clear, the next step is to understand the 'baseline' and take inventory of a community's working waterfront infrastructure and other physical access points necessary to operate a fishing business. This will help prioritize at-risk areas, preserve working waterfront, and design projects in a way that is manageable within the capacity of a given municipality. Along with the inventory, indicators and metrics to measure over time are crucial. These indicators can be used to monitor both success and pressure on working waterfront. When a community understands the needs of their working waterfront, they'll be more prepared to address them through action with comprehensive plans, harbor management plans, and town ordinances. We will share examples of the variety of working waterfronts that exist on Maine's coast, and share how municipalities in Maine are using existing tools and resources to preserve their working waterfront. We will also share a template for NGOs or municipalities to inventory working waterfront within a community

with suggested indicators and metrics to monitor change.

Session E2

Location: Campus Center 3545

Theme: Waterfront Industries

How NOAA and its Partners Work Together to Support Working Waterfront Communities to Address the Changing Stressors on Working Waterfronts

Panel

Colleen Roche, NOAA Office of Coast Survey, Silver Springs, MD

Steve McKenna, Massachusetts Office of Coastal Zone Management, Cape Cod and Islands Region, MA

Becca Newhall, NOAA Office for Coastal Management, Gloucester, MA

Jennifer McCann, University of Rhode Island Coastal Resources Center and Rhode Island Sea Grant, Narragansett

Andrew Lipsky, NOAA Northeast Fisheries Science Center, Woods Hole, MA

Traditional working waterfronts and connecting waterways are under stress from changes to climate, ecology, economy, society, and renewable energy. This panel will discuss the work NOAA and its partners are doing to collect data and provide actionable science guidance and technical assistance to help coastal communities to make informed decisions to address the interaction of increasing stressors on coastal and marine ecosystems. NOAA panelists will also discuss how these stressors are affecting their operations and the means for mitigating impacts, including measures to increase collaboration across line offices and how data is driving the future of NOAA's products and services.

Session E3

Location: Wheatley 1-004

Theme: Waterfront Infrastructure

Oral Presentations

If the Habitat isn't on the Map, Does it Exist? Unexpected Habitat Features in Lake Michigan's Developed Harbors

Titus Seilheimer, Wisconsin Sea Grant, Madison, WI

Urban harbors and river mouths can be easily overlooked as fish and aquatic habitat, especially if no one is looking for it. We developed a framework for mapping bathymetry and habitat in five Wisconsin harbors using readily available sonar and mapping software. The harbors and adjacent upstream portions of the associated rivers were mapped on multiple occasions in 2016 to 2021. The mapping identified structures, such as limestone slabs, that were not built as habitat but were being used "incidental" habitat. Sonar data was processed in ArcGIS to create bathymetric maps, substrate maps, and sidescan mosaics. Additional visits to groundtruth the remote data were completed using diving and grab samples. The mapping team worked with local advisory committees in each community to identify potential habitat areas, as well as to provide guidance on the final mapping products. Involving local and governmental stakeholders will ensure that areas of interest are targeted and that they will be aware of the information when planning

Concurrent Sessions E1-E5

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future restoration and other projects. The maps were also used to identify areas of adequate depth for a 1.2 hectare pilot planting of wild rice on one of the study sites. Restoration projects can include newly found habitat areas and elements in their designs. Much of the data collected while mapping the Milwaukee Estuary, a designated environmental Area of Concern (AOC), is now being used to inform the rehabilitation of aquatic habitats with the goal of delisting the AOC.

NERACOOS: Delivering Data for the Working Waterfront

Thomas Shyka, NERACOOS, Portland, ME

The Northeastern Regional Association of Coastal Ocean Observing Systems (NERACOOS) is the Northeast component of the U.S. Integrated Ocean Observing System (IOOS). NERACOOS' mission is to serve people by creating, organizing, and sharing information about the ocean. NERACOOS supports an extensive system of ocean observing technologies including met/ocean buoys, high frequency radars, water level stations, nearshore sensors, gliders, and oceanographic models. All of the data generated by these technologies are organized in a standards based data management system and NERACOOS provides access to the data through a set of tools and services. This presentation will provide an overview of NERACOOS and highlight key NERACOOS information products that are geared toward the working waterfront community. The specific products that will be demonstrated include the Mariners' Dashboard and the Ocean Climate Display. The Mariners' Dashboard is NERACOOS' primary product for access to real-time ocean observations and forecasts. The Dashboard was designed in collaboration with commercial and recreational mariners to effectively deliver information required for coastal navigation and safety. The Dashboard organizes the latest observations in an easy to use presentation and includes data from a variety of organizations including NERACOOS, the National Data Buoy Center, Coastal Data Information Program and others. The Dashboard is a web based tool and was developed with responsive design so that it functions effectively on a mobile device. The Ocean Climate Display helps answer the common question of "how are ocean conditions changing?" This tool organizes 20 years of regional buoy data into an easy to use display that allows users to see past conditions and compare how current conditions relate to the past conditions and long term averages. NERACOOS products are evolving as we integrate new technologies and data into our system. We are continually seeking feedback and suggestions from existing and new information users so that we can improve and expand our data products to serve all of our stakeholders.

Advancing Green Infrastructure at Great Lakes Marinas

Julia Noordyk, University of Wisconsin Sea Grant, Green Bay, WI

Marinas offer a "last chance" opportunity to treat and manage stormwater runoff before it enters Great Lakes and coastal waters. Clean Marina programs are perfectly positioned to help coordinate and connect marinas with the resources and technical assistance needed to implement impactful stormwater improvements at their facilities. Starting in 2019, a team from the Wisconsin, Michigan and Ohio Clean Marinas programs embarked on a three-year public-private partnership to help Great Lakes marinas make their facilities more environmentally sustainable by harnessing the power of green infrastructure. Come hear about the successes and challenges in implementing stormwater improvement projects at four marinas along the Great Lakes of Superior, Michigan and Erie. You will also be introduced to the Clean Marina Stormwater Toolkit, an online resource for learning about, visualizing and building green infrastructure

at marinas.

Session E4

Location: Wheatley 02-198

Theme: Recreational Boating and Harbors

Oral Presentations

Seeking Shelter from the Storm: Harbors of Refuge from Hurricanes and Tropical Storms in Louisiana

Niki Pace, Louisiana Sea Grant Law & Policy Program, Baton Rouge, LA

An immediate need arose as Hurricane Laura approached southwestern Louisiana in August 2020 – where could vessels go to find safety during the storm. This need is not new. Rather, it is one heard across the Gulf during an active storm season, and one repeatedly heard by Louisiana Sea Grant (LSG) as Louisiana braced for numerous storm events in 2020, ultimately experiencing direct hits from three named events. Every vessel lost has a direct economic impact on the owner, the navigability of waterways and those ultimately charged with removing the vessel. While extensive research has been conducted on terrestrial evacuation needs and routes, little has been focused on aquatic evacuation needs. Many uncertainties must be addressed: What is the current landscape of harbors of refuge in Louisiana? How do vessels make decisions with regards to seeking refuge, and where do they go? How do these decisions vary across geography? Where could additional harbors of refuge be located to support the commercial fishing fleet in Louisiana? What criteria must be met before an area can be designated a harbor of refuge? How do officially designated harbors of refuge differ from informal harbors of refuges? Using a three-fold approach, LSG developed a pilot project to assess the geographical, legal, and socioeconomic needs for improved access to harbors of refuge in Louisiana, focusing on areas in southwestern Louisiana that were affected by Hurricane Laura. This presentation will share lessons learned, challenges encountered, and best practices identified through this process.

Estimating the Economic Impact of Cape Cod Harbors

Chloe Schaefer, Cape Cod Commission, Barnstable, MA

Cape Cod's harbors are historically and culturally significant drivers of the "blue economy." Cape Cod has long been shaped by its relationship to the water, and harbor-adjacent businesses have economic impacts that echo throughout the region. Their sustainability is challenged by changing environmental conditions, competing municipal priorities and constrained budgets. Coastal harbors commonly lack sufficient berthing, present conflicting uses, require additional parking, and suffer from the increasing impacts of climate change. Cape Cod's harbors have dynamic sediment transport processes, resulting in sediment build-up and navigational issues, and are exposed to storms and intense wave energy, enhancing the need for frequent dredging. Knowing that businesses along the coast rely on access to harbors and are significant economic drivers for the region, Cape Cod communities must constantly balance harbor improvements and maintenance with other necessary investments. With the understanding that harbors undoubtedly contribute to Cape Cod's competitive advantage, the Cape Cod Commission initiated a study to better understand the economic importance of Cape Cod's harbors. The Commission is the regional planning agency for Barnstable County, charged with balancing environmental protection and economic progress. The Commission leads development and implementation of the Cape Cod Comprehensive Economic Development Strategy,

Concurrent Sessions E1-E5

THURSDAY, JULY 21, 11:00 A.M. - 12:30 P.M.

a tactical economic development plan intended to facilitate a thriving and balanced economy, which prioritizes actions to support and enhance the blue economy. In collaboration with the Urban Harbors Institute at UMass Boston, the Commission evaluated the local and regional economic impacts of six harbors in four communities. Inner and Great Harbors in Falmouth, Sesuit Harbor in Dennis, Stage Harbor and Aunt Lydia's Cove in Chatham, and Provincetown Harbor represent a variety of harbor types, varying in their physical characteristics and water-dependent and -adjacent uses. The study relied on a survey of harbor-reliant and -adjacent businesses and an input-output model to better understand their direct, indirect, and induced effects on the broader economy. Survey respondents directly employ 2,328 people across 58 industries and the direct compensation of employees totals nearly $160 million. The direct employment generates over $52 million in local, state, and federal taxes and the indirect and induced impacts identified have an even greater effect on the region's economy. While additional data and analysis is needed to better understand infrastructure needs, municipal revenues and expenses, and future climate change impacts, it is undeniable that harbors must continue to provide access and navigability to transportation vessels, research institutions, commercial fishermen, tourists, residents, and others; and they must do so in the face of competing municipal priorities and the ever-increasing impacts of sea level rise, storm surge and other climate change effects impacting the region's fragile coastline. The results of the study provide data and information supporting priorities related to harbor functionality and maintenance necessary to secure and improve upon the economic benefits they provide. The study also provides relevant local data and a methodology, adapted from a NOAA Office of Coastal Management publication, that policy makers, business owners, and others can use to better understand the economic contributions of other harbors in the region.

Dredging Piers, Wharfs, and Marinas in Portland Harbor: Making the Impossible Achievable

Bill Needelman, City of Portland, Maine, Portland, ME

The public and private berthing infrastructure of Portland Harbor in the communities of Portland and South Portland, Maine haven't been dredged in decades - in some circumstances, over a century. While Portland Harbor may be the busiest and most important harbor in Maine, the absence of maintenance has diminished capacity by as much as 26% in some areas and created barriers to further maintenance and improvements. Predictably, legacy industries and urban storm water runoff have left the harbor sediments polluted and unsuitable for open water disposal creating a barrier to typical dredging options. Long-time Portland Waterfront Coordinator, Bill Needelman will share the history of the community effort to solve the problem of contaminated sediments with the goal of restoring, improving, and maintaining the berthing resources of Maine's busiest harbor. Leveraging a wide coalition of municipal, regional, and state partners, the Portland Harbor Dredge and CAD project has engaged the community, fisheries, environmental groups, permitting agencies, and all levels of government. This impressive coalition has done what few dredge projects can claim - they have united lobstermen, environmental activists, union labor, and a host of others in support of the project. What they have failed to do is fund the project. The presentation will explore successes, failures and the on-going fight to save an iconic working waterfront. The presentation will additionally explore how new federal funding opportunities are asking marine projects to address current headline issues such as climate change, social inequities, and environmental justice. Can an ancient industry compete for funds within the new political realities? How can marine

projects describe their relevance to a non-marine audience?

Port by Port: Profiles and Analysis of the Massachusetts Commercial Fishery

Kimberly Starbuck, Urban Harbors Institute, UMass Boston, Boston, MA

Massachusetts is known worldwide for its commercial fisheries, a significant part of the region's history and culture that help drive the state's economy. Despite the industry's significance, Massachusetts fishermen report that they are being displaced from harbors and struggle to obtain access to essential or important port infrastructure such as dockage, ice, parking, and hoists. The study, "Port by Port: Profiles and Analysis of the Massachusetts Commercial Fishery", investigated the status of the Commonwealth's commercial fishing and port infrastructure within each municipality. Utilizing the results of harbormaster and commercial fishing surveys, the study highlights access and infrastructure needs along the coast of Massachusetts. In addition, this study details levels of fishing effort and values of landings at state, regional, and municipal levels, based on data collected by the Massachusetts Division of Marine Fisheries. This presentation will summarize the study results and provide recommendations intended to preserve or enhance access and infrastructure for the Massachusetts commercial fishing industry. This study was developed through a collaboration between the Massachusetts Division of Marine Fisheries, the University of Massachusetts Boston's Urban Harbors Institute, and the Cape Cod Commercial Fishermen's Alliance.

Session E5

Location: Wheatley 2-0200

Theme: Working Waterfront Workforce Development

Oral Presentations

Unconventional Pathways Focusing on What Matters: A Co-Produced Seafood Internship Program

Kristin Uiterwyk, Urban Harbors Institute, UMass Boston, Boston, MA

Multicultural coastal communities with generations of seafood-dependent livelihoods face stressors that affect food security and income including climate change, fluctuations in natural resources, constraints imposed by regulatory changes, population growth, and food security demands. Addressing these challenges requires the integration of research, education, and outreach collaborative initiatives fostering the expansion of waterfront industries and coastal communities' economies while promoting the sustainability and resilience of local fisheries and livelihoods. We developed an interdisciplinary team and network of partners along the seafood supply chain (e.g., harvesters, dealers, processors, distributors, retailers, restaurants, markets, consumers), scientists, and managers) with an overarching goal to explore novel tools and identify opportunities to address seafood system challenges in Massachusetts coastal communities. Facing the COVID pandemic, and significant interruptions to the seafood sector and to our ongoing research, we explored a collaborative structured process with our partners, leveraging graduate students and researchers, to develop a unique and effective internship program that yielded concrete products and actions that addressed critical needs in the industry from different perspectives. Our internship program was developed aiming for co-production of actionable science and transfer of solution-oriented plans to broader audiences. During Spring-Summer 2021, eight students were paired with

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researchers and were embedded with local seafood industry partners to address real-world issues. We applied participatory action research approaches centered on workforce development opportunities and stakeholder engagement that is grounded in community-based input, and seafood system's needs and priorities. The activities of our internship program were externally evaluated by experts using an evaluation online survey distributed to students and industry partners participants. Results informed the opportunity to enhance and expand the educational and training components of the program and further develop enduring partnerships with industry partners and researchers. This integrative model enabled novel fundamental and applied research, outreach, formal and non-formal education, and professional development opportunities to address coastal communities and seafood food systems needs and deliver science-based knowledge to diverse end-users and inform decision-making processes. In this presentation we share insights and innovations that can be translated into strategic actions and applied to other regions in developing internship and training opportunities focused on user-inspired scientific research and partnerships investing in workforce development and equitable economic growth.

A South Carolina Sea Grant Consortium Initiated Partnership to Preserve Maritime Heritage and Plan for a Sustainable Future

April Turner, South Carolina Sea Grant Consortium, Charleston, SC

McClellanville, a small South Carolina fishing village with a population of less than 500, has sustained itself economically by the commercial harvest of approximately 47 species. According to the NOAA National Marine Fisheries Services' Social Indicators for Coastal Communities (Jepson and Colburn, 2018), McClellanville is more reliant on commercial fishing than any other town or city within the South Atlantic Bight (geographic region from Wilmington, N.C. to Key West, FL). Commercial fishing is not only critical to the community's sustainability, but the southeastern region needs McClellanville to continue to serve as a regional seafood hub to supply the U.S. with healthy, domestically-sourced protein. As many traditional working waterfronts become vulnerable to high-end residential development, commercial activity, and climate change, much of the South Carolina commercial seafood industry has been affected by changes in waterfront property use. This is cause for concern among McClellanville's watermen and the community, as the town's largest seafood business owner is approaching retirement and the future of the working waterfront is uncertain. Since 2017, the S.C. Sea Grant Consortium (Consortium) has collaborated with the Town of McClellanville, its citizens, industry partners, watermen, and local nonprofit organizations on an initiative to develop and implement a comprehensive master management plan and viable business model to protect and sustain the cultural and economic values of the town's working waterfronts. Input from community visioning sessions and recommendations from the waterfront master plan, coupled with funding and resources leveraged from a variety of grant programs were used to achieve a number of initiative goals. These efforts have resulted in the creation of a non-profit, the McClellanville Community Foundation (MCF), to assist with working waterfront ownership and protection, as well as the formation of the McClellanville Watermen's Association (MWA), which provides the local watermen with a vehicle to organize a cooperative ownership and operation business model of wholesale and retail seafood distribution. More recently, funding from the National Sea Grant Office's "Food from the Sea" Careers Program was received to develop a feasibility study and blueprint

for a fisheries and aquaculture workforce training program in McClellanville. Community meetings, focus groups, and a learning exchange trip to the Rhode Island Commercial Fisheries Institute have all been part of the process to explore critical questions necessary to establishing a training program. Subsequent town council meetings and MCF board meetings have recognized the need to allocate infrastructure assets towards a training center facility. Immediate next steps for McClellanville, the Consortium, and partners include: MCF's registration for a Data Universal Numbers System (DUNS), System for Award Management (SAM), and Grants.Gov; a stakeholder workshop to explore more affordable insurance options for shrimpers; building local capacity to manage large-scale federal grants; and building public support for the acquisition of facilities and assets to use as a future training center.

Bluetech: What is it? Why Now? Why Here?

Mark Huang, SeaAhead, Inc. Cambridge, MA

Bluetech - STEM based venture innovation is a new entrant to ocean sustainability. Similar to the transformation of centralized fossil fueled utilities-to-renewables, automotive-to-electric and Big Food-to - sustainable & organic, startups are now entering the ocean economy with triple bottom line goals. The issues on our coast and 'out-at-sea' are acute where bluetech brings new 1) paradigms, 2) technologies and 3) stakeholders to the threat. What is bluetech? What is different? Why Greater Boston? Specifically, what can it mean for the waterfront?

Workforce Issues Within the Maritime Industry

Randall Lyons, Massachusetts Marine Trades Association, Foxborough, MA

The Massachusetts Marine Trades Association (MMTA) is a non-profit trade association representing the recreational boating industry in Massachusetts since 1964. The recreational boating industry in Massachusetts has an economic impact of $4.4 Billion dollars and supports close to 20,000 jobs for men and women throughout the state. There are approximately 1,000 businesses in the state as well. In New England the Economic impact is over $15 Billion Dollars and there are close to 80,000 men and women working within the industry. Over the course of the last 24 months the boating industry has done well during the Covid-19 pandemic and we have welcomed new boaters in record numbers. With the increase in boaters and demand within the industry, our workforce challenges have remained a significant burden. Workforce solutions remains a top priority for our association and member businesses. The MMTA has been fortunate to work in a collaborative manner with state officials, educational partners, our member businesses, job seekers and more to tackle this issue. We remain proactive in our support of this issue in working with our members on training needs and connecting them with students training within the industry. We also recognize the importance of retention of staff members and maintaining positive work environments. My portion of the proposed panel discussion would be focused on MMTA's collaborative efforts on workforce solutions and some unique ideas that we have implemented over the last few years.

Concurrent Session F

THURSDAY, JULY 21, 1:30 PM - 3:00 PM

Session F1

Location: Campus Center 3540

Theme: Commercial Fisheries and Aquaculture

Our Blue Future: Toward a Decarbonized Seafood Supply Chain

Panel

Sam Belknap, Island Institute, Rockland, ME

Ben Conniff, Luke's Lobster, Portland, ME

Matt Tarpey, Maine Electric Boat Company, Biddeford, ME

Boe Marsh, Community Shellfish, Bremen, ME

Wild caught and aquaculture seafood provide significant opportunities to feed the world high quality foods with less climate impact than terrestrial agriculture. However, they are not without their own climate impacts. In this session you will hear from marine businesses and non-profit partners that are helping the Maine seafood industry lead the way in creating the low-carbon seafood supply chain of the future. The Island Institute, Luke's Lobster, Community Shellfish, and Maine Electric Boat Company will discuss the various research, initiatives, and actionable steps that they are taking to reduce the carbon footprint of Maine seafood, from ship to shore and throughout the entire supply chain. Participants will learn about the greenhouse gas emissions analysis done on the supply chain of Luke's Lobster that is identifying actionable and replicable steps that can reduce these emissions; they will also learn about the opportunities presented by the electrification of vessels and the build out of the shoreside infrastructure required for a such a transition; most importantly participants will hear from Community Shellfish and Luke's about the actual steps they have already taken to lower their climate impact, and how these same steps can be translated to the rest of the country. This panel seeks to demonstrate how the seafood sector and the working waterfront on which it relies can lead to ways in addressing the causes and consequences of a changing climate.

Session F2

Location: Campus Center 3545

Theme: Working Waterfront Workforce Development

The Young Fishermen's Development Act: Training Needs for the Next Generation

Panel

Natalie Springuel, Maine Sea Grant, Bar Harbor, ME

Joshua Brown, NOAA National Sea Grant Office, Silver Springs, MD

Ben Martens, Maine Coast Fishermen's Association, Brunswick, ME

Bryan Fluech, University of Georgia Marine Extension & Georgia Sea Grant, Athens, GA

Theresa Talley, California Sea Grant, La Jolla, CA

Seafood harvesters, growers and processors are dependent on the nation's working waterfronts for survival. At the same time, the vitality of the seafood sector depends on the next generation of seafood leaders and workers having the skills, experience and vision needed to bring this sector into the future. In December of 2020, the US Congress passed the Young Fishermen's Development Act, a law intended to allocate funding toward training programs for the

next generation of commercial marine harvesters and growers. The Act was passed with the support of organizations from across the country in order "to preserve United States fishing heritage through a national program dedicated to training and assisting the next generation of commercial fishermen." Though the actual funding has yet to be allocated by Congress (as of March 7, 2022), they named NOAA's National Sea Grant Program as the ultimate administrative body for the program. In September of 2021, in anticipation of this future funding, National Sea Grant awarded scoping grants to 11 state Sea Grant programs and their local partners to support "Food from the Sea" career development programs and to develop planning frameworks that reflect the diverse nature of training needs around the country. The national initiative is helping identify where existing programs might be enhanced to better meet the needs of future industry leaders or where new training opportunities might be put into place. Projects range in size, scope, and design that are as diverse as the localized needs they aim to address. According to Ben Martens, director of Maine Coast Fishermen's Association and the Fishing Communities Coalition (a national coalition who helped get the act passed),"Questions to be addressed include what knowledge, skills, and expertise early career fishermen and sea farmers lack to get started for successful life-long work in this sector, what barriers to training exist and how can we remove them, and how to support the next generation to envision and secure their role in an industry that will sustain Maine and the Nation's coastal communities into the future." This panel session will focus on the history and intent of the Young Fishermen's Development Act, the planning currently in the works in various states, results from multiple training needs assessments that reflect the nation's diverse seafood sectors, and potential updates from Washington DC regarding future implementation of the Act.

Session F3

Location: Wheatley 1-004

Theme: Waterfront Infrastructure

Leveraging Partnerships and Funding to Create Thriving Working Waterfronts for Traditional Maritime Industries and the Emerging Offshore Wind Industry in Massachusetts and the Region

Panel

Lisa Engler, Lisa Engler, Massachusetts Office for Coastal Zone Management, Boston, MA

Bruce Carlisle, Massachusetts Clean Energy Center, Boston, MA

Seth Lattrell, Salem Port Authority, Salem, MA

John Regan, New Bedford Port Authority, New Bedford, MA

Nate Mayo, Vineyard Wind, New Bedford, MA

Session F4

Location: Wheatley 02-198

Theme: Climate Change

Resilience in Working Waterfront

Panel

Kathryn Glenn, Massachusetts Office of Coastal Zone Management, Gloucester, MA

Ceaser Duarte, New Bedford Port Authority, New Bedford, MA

Concurrent Session F

THURSDAY, JULY 21, 1:30 PM - 3:00 PM

Vito Giacalone, Gloucester Fishing Community Preservation Fund, Gloucester, MA

Brad Washburn, Massachusetts Port Authority, Boston, MA

Working waterfronts serve a critical function in the Massachusetts economy, supporting industries such as fishing, shipping, manufacturing, tourism, energy, and marine transportation. Massachusetts has 10 Designated Port Areas (DPAs) throughout the Commonwealth with the unique combination of features and conditions necessary to support active water-dependent industrial uses and thriving working waterfronts. Massachusetts' state policy aims to preserve and enhance the capacity of working waterfronts by accommodating water-dependent industrial uses that are integral to the vibrancy of local, state, regional, and national economies and help support the vitality, variety, resilience and character of working waterfronts in the Commonwealth. The growth, success and long-term viability of these working waterfronts is tied to waterways and the maritime industries they support. Water-dependent industrial users in working waterfronts face unique resilience challenges with sea level rise and flooding due to their operational needs in working directly adjacent to the water in vulnerable locations. With projected sea level rise and other climate change related factors, these hazards are expected to increase in severity and frequency over the coming century, posing significant risk to working waterfronts. This panel will be a conversation among water-dependent industrial users, DPA municipal officials, and other working waterfront stakeholders about the climate challenges they face, how they're approaching resiliency, and lessons learned. The goal of this conversation will be to share these perspectives and strategies to advance solutions and resources for strengthening resilience in working waterfronts.

Session F5

Location: Wheatley 2-0200

Theme: Waterfront Infrastructure

Updating Boston Harbor's Designated Port Areas for 21st Century Challenges

Panel

Jill Valdés Horwood, Barr Foundation, Boston, MA

Julie Wormser, Mystic River Watershed Association, Arlington, MA

John Walkey, GreenRoots, Chelsea, MA

Magdalena LaBattaglia, Harborkeepers, Boston, MA

The Massachusetts Public Waterfront Act (Chapter 91) established a zoning overlay district to protect water-dependent industrial uses and their associated infrastructure and transportation corridors from fragmentation and loss. This created ten Designated Port Areas (DPAs) along the state's coastline, including four in Boston's Inner Harbor. Since their designation in the 1970s, the context surrounding DPAs has dramatically changed. Globalization, just-in-time supply chains, larger container ships, and other maritime industry norms consolidated much of Boston Harbor's working port away from the privately owned DPAs in the Lower Mystic River and Chelsea Creek. The area's port infrastructure needs significant investment, leaving a significant percentage of the DPAs underused for maritime industrial purposes. More recently, climate change-driven coastal flooding and tremendous interest in redeveloping DPAs for high-end residential housing and biotech labs have put historic pressure on these areas to be de-designated through regulatory or legislative action. Targeted updates to DPA regulations could provide win-wins for private landowners and maritime businesses

and serve broader public purposes such as: * Preventing coastal flooding from damaging inland neighborhoods, * Providing economic opportunities for historically marginalized residents, * Supporting flood-resilient industrial uses, and * Preventing gentrification along the remaining portions of Boston Harbor's waterfront. This workshop is a great opportunity for a range of working port advocates to discuss the pros and cons of different strategies to help support and protect Boston's working waterfront through updating DPA regulations.

Poster Session Abstracts

THURSDAY, JULY 21, 12:30 PM - 1:40 PM

Location: Campus Center Ballroom 3550

Poster 1

Theme: Waterfront Industries

Ocean Observing to Support the Northeastern Working Waterfront

Katy Bland, NERACOOS and New Hampshire Sea Grant, Lee, NH

In order to support commerce, safety, human and ecological health, and hazard preparedness, the Northeastern Regional Association of Coastal Ocean Observing Systems (NERACOOS) provides oceanographic information to the Northeast region, a large, dynamic, environment that stretches from the Gulf of Maine to Long Island Sound. NERACOOS is an independent non-profit 501 (c)(3) organization that is one of eleven regional associations comprising the U.S. IOOS. Our mission is to serve people by creating, organizing, and sharing information about the ocean. NERACOOS supports an extensive system of ocean observing technologies including met/ocean buoys, high frequency radars, water level stations, nearshore sensors, gliders, and oceanographic models. All of the data generated by these technologies are organized in a standards-based data management system and NERACOOS provides access to the data through a set of tools and services. People who work on the water, as well as those who live in coastal communities, depend on NERACOOS data and forecasts to make important decisions, such as when to bring oil tankers into port and whether it is safe to go fishing. Scientists and meteorologists utilize NERACOOS data to better understand and predict storms, sea-level change, animal migrations, harmful algae blooms, and more. The information NERACOOS provides helps protect lives and property, empower coastal economies, and improve the health of our oceans. At the National Working Waterfronts Network Conference, our poster presentation will outline how NERACOOS' ocean, nearshore, and in-shore monitoring methods inform working waterfronts.

Poster 2

Theme: Innovations and Best Practices for Water-Dependent Uses

Assessing Marine Industry Compliance in the Crabber-Towboat Agreement

Leslie Nguyen, University of Washington, Seattle, WA

The coastal waters off the U.S West Coast provide many opportunities for commercial and industrial use. In particular, the coastal commercial Dungeness crab fishery and the tug/towboat industries occupy similar areas of coastal waters for daily and seasonal uses. Because of this overlap in shared space, conflicts have arisen as tug/towboats occasionally run over and decimate set crab pots. Not only does this incident result in lost commercial catch for crab fishers, but the tug/towboat industries must also pay workers to clear affected boat props of crab gear. To mitigate this conflict and potential financial loss for both industries, the Crabber-Towboat Lane Agreement was created in 1971 as an informal, non-regulatory agreement between the commercial Dungeness crab fishery and the tug/towboat industry. The agreement designates towlanes in which tug/towboats must travel within and in return, crab fishers agree to set pots outside of these lanes. With good compliance, the Crabber-Towboat Lane Agreement is an example of outstanding, efficient, and progressive cooperation to increase the resiliency of the commercial crab fishery and tug/towboat industry. However, up until now compliance with the agreement has yet to be evaluated. To explore the success of the agreement we synthesized large geospatial datasets on vessel traffic along with the latest lane boundaries established in

2019 to create an interactive map where tug/towboat traffic and towlanes are visible simultaneously. This information shows the success of the lane agreement to West Coast Ocean users and promotes the collaborative nature of fishing communities and working waterfronts.

Poster 3

Theme: Innovations and Best Practices for Water-Dependent Uses

Equinor Wind US and Fisheries and Marine Engagement

Kristin Kelleher, Equinor, Boston, MA

Equinor Wind US's Empire Wind and Beacon Wind will deliver 3.3GW of renewable energy power for ~2 million homes. They will also deliver $2.5 billion in economic development commitments to NY, $47 million for community benefits and $25 million for environmental research. Equinor Wind US is committed to coexistence with commercial and recreational stakeholders and aim to proactively avoid and minimize impacts on fishing throughout all phases of the projects' life-cycle. Consultations with fishermen from Massachusetts to New Jersey are ongoing to receive their valuable feedback.

Poster 4

Theme: Maritime Community, Culture and Heritage

Stories from the Alabama Waterfront: Preserving the Oral Histories of Bayou La Batre

Jody Thompson, Auburn University and Alabama Cooperative Extension

Working waterfronts along the Gulf coast share a rich tapestry of historical, cultural and economic significance that can be difficult to communicate. One of the best ways to capture the fabric of the working waterfront is through oral histories. Over the years, many efforts have been made to capture the oral and video histories of those along Alabama's working waterfront, resulting in a trove of valuable high-quality information that carries the importance of preserving these spaces. However, although a wide library of content exists, it remains piecemeal, serving as a static resource to be accessed on demand. In an effort to put these resources into a more active use, the Mississippi-Alabama Sea Grant Consortium in partnership with Auburn University, Alabama Cooperative Extension System, and the University of Mississippi, worked with oral historian Anna Hamilton to create a dynamic, interactive picture of Alabama's working waterfront. Using ArcGIS StoryMaps, the team used multiple media types to create an impactful audiovisual and interactive telling of arguably Alabama's most important working waterfront town, communicating the importance of this economic and cultural system.

Poster 5

Theme: Maritime Community, Culture and Heritage

UMass Boston

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An Economic Development Strategy for Louisiana's Freshwater Seafood

Industry

Madelyn Smith, Meridian Institute, Washington, D.C.

For generations, the inhabitants of Central Louisiana have relied on plentiful supplies of freshwater fish harvested from the region's rivers, lakes, and bayous. Catching and eating these sustainable supplies of unique, local seafood are a key part of Louisiana's rural economy and working waterfront culture. While inland fisheries have struggled in recent years, a growing desire for local, sustainable, heritage products and a focus on local supply chains due to the COVID-19 pandemic indicate new market opportunities for wild-caught freshwater seafood. To shed light on this industry's rich past and future potential, the U.S. Department of Agriculture (USDA) commissioned a team of researchers from the University of Louisiana Lafayette, Louisiana Sea Grant, and Meridian Institute to explore central Louisiana fisheries issues, challenges, and opportunities. To gain a better understanding, the team visited with fishermen, processors, distributors, economic developers, public officials, and academics to learn about their experiences, observations, and difficulties working in freshwater fisheries, as well as their hopes for the industry's future. Informed by these conversations, the research team developed a report that characterizes the history and the current condition of Louisiana's freshwater fisheries and outlines an economic development strategy tailored to Central Louisiana to catalyze growth and market development. This work complements and builds upon the team's 2020 publication: An Economic Development Strategy for Louisiana's Coastal Seafood Industry. In concert, these two reports contribute interdependent insights and recommendations for investing in the vitality of Louisiana fisheries—bolstering the state economy and reconnecting Louisianans with a critical part of their culture and heritage in the process.

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The National Working Waterfront Network (NWWN) is a nationwide network of businesses, industry associations, nonprofits, local governments and communities, state and federal agencies, universities, Sea Grant programs, and individuals dedicated to supporting, preserving, and enhancing our nation's working waterfronts and waterways.

Participation in the NWWN is open to all individuals and organizations involved in working waterfront issues at the federal, state, and local level. Our mission is to increase the capacity of coastal communities and stakeholders to make informed decisions, balance diverse uses, ensure access, and plan for the future of their working waterfronts and waterways.

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