WICKED GOOD MARINE EDUCATION

NATIONAL MARINE EDUCATORS ASSOCIATION
2024 CONFERENCE

July 28 - August 1, 2024  |  Boston, Massachusetts

Hosted by Massachusetts Marine Educators
NOAA Education connects you to resources for learning and teaching about the ocean and atmosphere.

Explore opportunities from across NOAA for students, educators, and curious people everywhere.

Connect with us!

@NOAAEducation

noaa.gov/education | education@noaa.gov
Welcome from your Conference Co-Chairs

Well hello NMEA! It has been 13 years since the Massachusetts Marine Educators have welcomed you to Boston for the annual conference. We’re happy to have you back in Beantown, smack in the middle of a region that is as well known for its marine science education resources and ingenuity, as it is for championship teams, chowder, bad traffic, and dropping the letter R, only to put it somewhere where it shouldn’t go. Even though Boston University is less than two miles from Northeastern University, where we hosted the 2011 conference, this will be a different experience for those of you who joined us then. That being said, we couldn’t pass up the opportunity to bring you to the New England Aquarium again. We’ll have ourselves a great evening there on the patio Monday night. We’ll get you on the water Wednesday night, for a cruise around the harbor and a chance to say proper goodbyes to your friends and colleagues, whether long-term or new. In between, we’ll keep you educated, engaged, and entertained.

We are really excited about our Plenary and Stegner Lecture presenters. Their varied experiences and innovative approaches to learning and educating should inspire all of you. These four individuals are shining examples of the depth and quality of marine science education in this region. The field trips are further testament to the variety of marine resources in this region.

The conference website and program list us as the co-Chairs. That doesn’t tell half the story. This conference doesn’t happen without the hours dedicated by MME Board members Grace Simpkins, Sierra Muñoz, Jim Cleere, Marianne Walsh, and Pat Harcourt. Plus, there’s the consistent support from Jackie Lewis at the National Office and Tara Hicks Johnson, Chair of the Conference Committee, who will soon become NMEA President. In addition, we acknowledge the behind-the-scenes work by Jennifer Magnusson, Kathy Fuller, Annette Brickley, Linda McIntosh, Emily Duwan, Val Perini, Kara Mahoney-Robinson, Kara Doherty and Rob Moir.

We are very appreciative of the agencies, organizations, businesses, and universities that have stepped up to sponsor this year’s conference. Their underwriting keeps the conference affordable and demonstrates their support for the work we all do. Please thank them when you see them, and visit them, and all of our exhibitors, on Monday and Tuesday in the Exhibit Hall.

Please make full use of our Whova account to participate in online icebreakers, follow the conference schedule, learn about concurrent session details, and stay in touch with each other. Most importantly, support your fellow educators by attending their concurrent sessions. The information learned, resources gained, and connections made will enhance your careers (said one of your co-Chairs who has attended 21 of these in person).

It’s gonna be a wicked good week together!

Your NMEA 2024 Conference Co-Chairs,

Bob Rocha & Don Pinkerton
Thank you to our sponsors!
Welcome to NMEA 2024!

Welcome from your NMEA President’s Chain

Dear NMEA Members and Conference Participants,

NMEA’s President’s Chain extends our warmest greetings to all of you! NMEA 2024 Conference is a time to reunite with old friends, meet new ones, and expand your professional network to those who are committed to making known the world of water, both fresh and salt.

From July 28th to August 1st, enjoy an enriching experience filled with inspirational speakers, engaging presentations, and exciting field adventures that showcase the natural beauty and rich marine heritage of the Boston Harbor and Cape Cod region. The conference agenda is filled with valuable networking opportunities aimed at fostering institutional collaborations and community partnerships.

In order to enhance your conference experience, we encourage you to utilize the Whova online Event Management Platform. This platform allows you to access the event agenda, plan your personal schedule, socially connect with fellow attendees, and receive important updates such as last-minute session changes from the organizers. You can access Whova on your device or in a web browser by logging in with the email you used to register for the event. If you have any questions or need assistance with Whova or any aspect of the conference, stop by the registration desk for guidance by one of our dedicated members of the NMEA conference planning committee members.

This conference serves as a pivotal moment for us to reflect on our achievements and chart the course for the future. As part of our ongoing strategic planning efforts, NMEA has partnered with Local Concepts, LLC to reevaluate our membership and organizational needs and desires. Many of you have already contributed valuable insights through focus groups, conversations, and surveys, for which we are sincerely grateful.

I am pleased to share that representatives from Local Concepts will be attending the conference. They will present their findings and strategic planning progress during the NMEA Business Meeting on Wednesday, July 31st, offering us all an opportunity to understand the direction of our organization more clearly.

Moreover, Local Concepts will be hosting various sessions and opportunities throughout the conference to gather additional input from NMEA members. Please consider participating in these sessions to contribute your perspective and help shape the future of NMEA. Your input is invaluable as we continue to strengthen our organization and better serve our members and the marine education community at large. If you have any questions about the strategic planning process or would like to connect with Local Concepts representatives during the conference, feel free to approach them directly or inquire at the conference registration desk.

Last but not least, we are grateful to our various NMEA Conference Sponsors, Massachusetts Marine Educators (MME) Chapter, and NMEA Conference Planning Committee for your tremendous contributions to ensure a successful event.

Thank you for joining us at the NMEA 2024 Conference. Together, let’s continue to inspire ocean literacy and foster a deeper appreciation for our marine and aquatic environments.

Warm regards,

Lindsay Patterson, NMEA President
Tara Hicks-Johnson, NMEA President-Elect
Laura Diederick, NMEA Past President
# Conference At-a-Glance

## Saturday, July 27
- **8:00 am - 4:00 pm**: Sea Grant Educators Network Meeting .......................... MIT Sea Grant
- **6:00 pm**: NMEA Board Dinner .............................................. Fenway

## Sunday, July 28
- **8:00 am - 5:00 pm**: NMEA Board Meeting ...................................... Terrace Lounge
- **4:00 pm**: Registration Opens .................................................. Stone Lobby
- **5:00 - 8:00 pm**: Welcome Reception ........................................ Ziskind Lounge

## Monday, July 29
detailed Monday information on pages 12, 13, 28, 29, 30
- **7:30 am - 8:30 am**: Committee Meetings ........................................ See Whova
- **8:00 am - 5:00 pm**: Registration Open ........................................ Stone Lobby
- **8:45 am - 9:15 am**: Welcome and Announcements .......................... Metcalf Large
- **9:15 - 10:15 am**: Keynote: Dr. Timothy Shank ............................. Metcalf Large
- **10:15 am - 5:00 pm**: Exhibits Open ........................................... Ziskind Lounge
- **10:30 am - 11:30 am**: Concurrent Session #1 ............................... Session Rooms
- **11:30 am - 12:30 pm**: Lunch & Buddy Lunch ................................. Metcalf Large
- **12:30 pm - 2:30 pm**: Concurrent Sessions #2 & 3 ........................ Session Rooms
- **2:30 - 3:30 pm**: Afternoon Break & Poster Session & Exhibits ........ Metcalf Large
- **3:30 - 4:30 pm**: Concurrent Session #4 ................................. Session Rooms
- **5:30 pm**: Depart for New England Aquarium .............................. See Whova

## Tuesday, July 30
detailed Tuesday information on pages 16, 17, 31, 32, 33, 34
- **7:30 - 8:30 am**: Committee Meetings ........................................ See Whova
- **8:00 am - 5:00 pm**: Registration Open ........................................ Stone Lobby
- **8:00 am - 5:00 pm**: Exhibits Open ........................................... Ziskind Lounge
- **8:30 am - 5:30 pm**: Student Day (see page 18) ............................ Various
- **8:30 am**: Announcements ....................................................... Metcalf Large
- **8:45 - 9:45 am**: Keynote: Dr. Letise LaFeir ............................... Metcalf Large
- **10:00 am - 12:00 pm**: Concurrent Sessions #5 & #6 .................. Session Rooms
- **12:00 - 1:00 pm**: Lunch & Chapter Meetings ............................... Metcalf Large
- **1:00 - 2:00 pm**: Stegner Lecture: Elizabeth James-Perry .......... Metcalf Large
- **2:30 - 4:30 pm**: Concurrent Sessions #7 & #8 .......................... Session Rooms
- **4:00 - 5:30 pm**: Past Presidents’ Circle ................................. See Whova
- **5:30 pm**: Dinner and Auction ................................................. Metcalf Large
Conference At-a-Glance

**Wednesday, July 31**
- **7:30 - 8:30 am**: Committee Meetings
- **8:00 am - 12:00 pm**: Registration Open
- **8:30 am**: Announcements
- **8:45 - 9:45 am**: Keynote: Terry Wolkowicz
- **10:00 - 12:00 pm**: Concurrent Sessions #9 & #10
- **12:00 - 2:00 pm**: NMEA Awards Luncheon, Business Meeting, and Chapter Basket Auction
- **2:30 - 4:30 pm**: Concurrent Sessions #10 & #11
- **4:15 - 5:15 pm**: New Board Meeting
- **7:00 pm**: Boston Harbor Cruise (ticketed event)

**Thursday, Aug 1**
- All day/Partial day: Optional Field Trips (must pre-register)

---

**NMEA Auction**

The annual NMEA auction is one of the highlights of the conference...a chance to have fun, bid on unique aquatic-themed items donated by local businesses and NMEA members (like this beautiful handmade NMEA 2024 quilt!)

All of the funds raised at our annual silent and live auction will go to our scholarship programs, which directly support marine and aquatic educators.

The 2024 NMEA banquet and auction will be held on **Tuesday, July 30 from 5:30 - 10:00 pm at BU's George Sherman Union (GSU)**.

Please drop off auction items Sunday, Monday, or Tuesday morning at the Registration Desk located in the Stone Lobby.
General Information:
All conference sessions take place at Boston University George Sherman Union located at 775 Commonwealth Ave, Boston, MA 02215.
Please wear your NMEA 2024 name badge to all sessions and events.

Conference Room Information:
- NMEA Central Desk and some exhibitors will be in Stone Lobby on the 2nd Floor.
- Plenaries, Posters, Lunches, and Snacks will be in the Metcalf Hall on the 2nd Floor.
- Exhibitors will be in the Ziskind Lounge on the 2nd Floor.
- Concurrent sessions, committee and chapter meetings, and meet-ups will be in the Backcourt and Academy Rooms on the 1st Floor, Metcalf Small, Conference Auditorium, and Terrace Lounge on the 2nd Floor, and East Balcony, Room 310, 312, and 315 on the 3rd Floor.
- Student Day orientation will be in the Metcalf Hall on the 2nd Floor.

Parking:
Daily parking passes for commuting conference attendees were available for purchase before Wednesday, July 24.
Daily parking passes are not valid for overnight parking. Overnight parking is available in a different lot for attendees staying in on-campus accommodations.
Daily commuter parking is available at the Warren Towers Garage at 700 Commonwealth Avenue from July 28 - August 1.
Handicap accessible parking is available in the Warren Towers Garage for attendees with handicap placards or plates.
Attendees with handicap placards or plates are allowed to park at any available street parking spot without paying at the meter. Limited street parking is available on Commonwealth Avenue a short walk from the George Sherman Union.

Transportation:
Buses for off-campus events will run as follows:

**Monday evening:**
- 5:30 & 5:45 pm: Buses depart; see Whova and/or morning announcements for pickup location.
- 8:30 & 9:00 pm: Buses will leave from the New England Aquarium and return to BU Campus.

**Wednesday evening:**
- 6:00 pm: Buses depart; see Whova and/or morning announcements for pickup location.
- 9:15 pm: Buses return to BU Campus.

**Thursday Field Trips:**
- See Whova and Registration Desk for info about field trip transportation.

Auction Items and Chapter Baskets:
Please drop off auction items at Registration in the Stone Lobby. Items for Chapter Baskets should be given to your Chapter Representative. Chapter Baskets can be set up Wednesday morning in the Metcalf Ballroom anytime before 11:30 am.

Wi-Fi:
You can access the Internet from your personal devices using Boston University’s guest network. Visit the Registration Desk for more info!

Meals:
**Included in full conference registration:**
- Breakfast pastries, lunch, coffee, and snacks (Monday, Tuesday, Wednesday)
- Heavy appetizers and drinks during Sunday’s ‘Kick-Off Event’
- Dinner at the Monday evening New England Aquarium Event and Tuesday Banquet & Auction

**Available for additional purchase:**
Choose from a full range of retail dining locations to suit your taste, budget and schedule. All cafes and markets on campus accept cash and credit cards.

Continuing Education Units (CEUs):
A certificate of participation is available at the end of this program.

Conference Program & Whova App
We will be using the Whova conference app as our main communication tool during the conference, so make sure you download it ahead of time. Scan this QR code for Whova app download information.

You can use the Whova app to:
- Explore the professional profiles of event speakers and attendees
- Send in-app messages and exchange contact info
- Network and find attendees with common affiliations, educations, shared networks, and social profiles
- Receive update notifications from organizers
- Access the most up-to-date event agenda, GPS guidance, maps, and parking directions at your fingertips

Questions?
You can find someone from the planning committee at the NMEA Central desk located in Stone Lobby on the 2nd Floor. You can also email us at nmea2024@marine-ed.org or contact the organizers through the Whova app.
WHOI is proud to support the National Marine Educators Association Conference

Proud to sponsor NMEA 2024!

WHOI Sea Grant

Proud to support

NMEA 2024 and “Wicked Good Marine Education!”
### Monday, July 29

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:30 am - 8:30 am</td>
<td>Committee Meetings</td>
</tr>
<tr>
<td>8:00 am - 5:00 pm</td>
<td>Registration Open</td>
</tr>
<tr>
<td>8:45 am - 9:15 am</td>
<td>Welcome and Announcements</td>
</tr>
<tr>
<td>9:15 - 10:15 am</td>
<td>Keynote: Dr. Timothy Shank</td>
</tr>
<tr>
<td>10:15 am - 5:00 pm</td>
<td>Exhibits Open</td>
</tr>
<tr>
<td>10:30 am - 11:30 am</td>
<td>Concurrent Session #1</td>
</tr>
<tr>
<td>11:30 am - 12:30 pm</td>
<td>Lunch &amp; Buddy Lunch</td>
</tr>
<tr>
<td>12:30 pm - 2:30 pm</td>
<td>Concurrent Sessions #2 &amp; 3</td>
</tr>
<tr>
<td>2:30 - 3:30 pm</td>
<td>Afternoon Break &amp; Poster Session &amp; Exhibits</td>
</tr>
<tr>
<td>3:30 - 4:30 pm</td>
<td>Concurrent Session #4</td>
</tr>
<tr>
<td>5:30 pm</td>
<td>Depart for New England Aquarium</td>
</tr>
</tbody>
</table>

**Keynote Speaker**

**Dr. Timothy Shank, Woods Hole Oceanographic Institution**

**Life in the Extreme: New Exploration and Research in Extreme Ocean Depths**

Dr. Timothy Shank is an Associate Scientist in the Biology Department of the Woods Hole Oceanographic Institution. He has participated in more than 76 scientific expeditions and is internationally recognized for his research to understand the ecological and evolutionary factors that affect the structure and evolution of diverse deep-sea communities and species.

**An Evening at the New England Aquarium**

Join us to enjoy Boston Harbor at the New England Aquarium’s outdoor patio for dining and drinks. Explore the aquarium’s many exhibits, and visit with the penguins, the octopus, and Myrtle the Green Turtle.

Buses will depart from campus at 5:30 & 5:45 pm and will return from the Aquarium to campus at 8:30 & 9:00 pm.
<table>
<thead>
<tr>
<th>Time</th>
<th>ACADEMY</th>
<th>BACKCOURT</th>
<th>CONF AUDITORIUM</th>
<th>EAST BALCONY</th>
</tr>
</thead>
</table>
| 10:30 am - 11:30 am | **Tami Lunsford**  
Climate Change PBL: Creating the Ocean/Coast we Want | **Sarah Schoedinger**  
Don’t be a Terrestrialist! Incorporating Ocean Science Concepts in a U.S. Standards-Based Teaching Environment (Part 1 - no requirement to attend both sessions) | **Joan Muller**  
Watershed Stewardship in Action: Deaf Students on the Estuary! | **Tressa Arbow**  
Using Whale Entanglements as an Anchoring Phenomenon for NOAA Science Camp |
| 12:30 - 1:30 pm | **Annette Brickley**  
Ocean & Climate Story-Telling with Data | **Susan Haynes**  
Don’t be a Terrestrialist! (Part 2 - no requirement to attend both sessions.): How to apply the Ocean Literacy Framework in a U.S. Standards-Based Teaching Environment | **Jennifer Maucher Fuquay**  
Expanding Accessibility to Participatory Science [...] | **Andrea Sassard**  
NOAA Education Community Town Hall |
| 1:30 - 2:30 pm | **Kate Schafer**  
Teaching Climate Change via Understanding, Connection and Empowerment | **David Christopher**  
Practical Applications: Environmental, Ocean, and Great Lakes Literacies and Beyond! | **Michelle Cusolito**  
Riding the Wave from Ocean Science to Outreach | **Tina Miller-Way**  
Integrating environmental and cultural history of the Gulf of Mexico using art: Postcards from the Past |
| 2:30 - 3:30 pm | **Emily Yam**  
Climate Solutions, Front and Center | **Aimee Bonanno & NEOSEC Member Organizations**  
Hands-on Ocean Science Activities with NEOSEC Member Institutions | **Karen Young**  
I Was A Kid: sharing the diversity of the ocean science field, one scientist at a time | **Niki Sullivan**  
Lobsterfishing versus Whales; the good, the bad, and the ugly |
<table>
<thead>
<tr>
<th>Sessions: Monday, July 29</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>METCALF SMALL</th>
<th>ROOM 310</th>
<th>ROOM 312</th>
<th>ROOM 315</th>
<th>TERRACE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Kathy Fuller</strong></td>
<td><strong>Lindsay Mossa</strong></td>
<td><strong>Deborah Rose</strong></td>
<td><strong>Pamela Blanchard</strong></td>
<td>None</td>
</tr>
<tr>
<td>A How to Guide for Leveraging NMEA Resources for Young and Emerging Professionals</td>
<td>Navigating Sustainable Oceans for a Resilient Future</td>
<td>Reading Ocean STEM with Young Children</td>
<td>Putting Down Roots in a Changing Landscape</td>
<td></td>
</tr>
<tr>
<td><strong>Ashley Eaton</strong></td>
<td><strong>Carolyn Kovacs</strong></td>
<td><strong>Anne Smrcina</strong></td>
<td><strong>Lisa Lawrence</strong></td>
<td>None</td>
</tr>
<tr>
<td>From Port to Praxis: a study evaluating the impact of vessel-based professional learning programs on K-12 teachers</td>
<td>Hands-on Activities for Plastics and Marine Debris Education</td>
<td>Partnering for Science and Art</td>
<td>Create Your Own Splash with a VA SEA Spinoff in your State!</td>
<td></td>
</tr>
<tr>
<td><strong>Peter Tebeau</strong></td>
<td><strong>Shantelle Landry</strong></td>
<td><strong>Kat Owens</strong></td>
<td><strong>Kristen Smith</strong></td>
<td>None</td>
</tr>
<tr>
<td>STEM Education Under Sail – Science of the Sea &amp; Ship in an Inspiring Venue</td>
<td>To B-WET and Beyond: Using Multiple Points of Engagement to Foster Belonging in Students</td>
<td>Entangled and Ingested: Sewing Session</td>
<td>White Shark Identification</td>
<td></td>
</tr>
<tr>
<td><strong>Michelle Cusolito</strong></td>
<td><strong>Anna Caputo</strong></td>
<td><strong>Celeste Kroeger Campodónico</strong></td>
<td><strong>Meghan Marrero</strong></td>
<td>None</td>
</tr>
<tr>
<td>Surrounded by Water: Life on a Research Vessel in the Middle of the Atlantic</td>
<td>VA SEA Turtles: Activities Created from Graduate Research on Turtles and Bycatch Reduction</td>
<td>Tramares, Weaving Reefs</td>
<td>Becoming a USA BlueSchool</td>
<td></td>
</tr>
<tr>
<td><strong>Leann Winn</strong></td>
<td><strong>Tom Savage</strong></td>
<td><strong>Kanesa Duncan</strong></td>
<td><strong>Timna Varela Sánchez</strong></td>
<td>None</td>
</tr>
<tr>
<td>Death becomes art</td>
<td>Rogue Drifter Buoy: When Predictions Collide with Ocean Borders</td>
<td>Seraphin</td>
<td>Integration Of Ocean Literacy [...]</td>
<td></td>
</tr>
<tr>
<td><strong>Hannah McDuffie</strong></td>
<td><strong>Meghan Marrero</strong></td>
<td><strong>Kanesa Duncan Seraphin</strong></td>
<td><strong>Timna Varela Sánchez</strong></td>
<td>None</td>
</tr>
<tr>
<td>Wide Horizons: Fostering Environmental Stewardship [...]</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Schedule: Tuesday, July 30

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:30 - 8:30 am</td>
<td>Committee Meetings</td>
<td>See Whova</td>
</tr>
<tr>
<td>8:00 am - 5:00 pm</td>
<td>Registration Open</td>
<td>Stone Lobby</td>
</tr>
<tr>
<td>8:00 am - 5:00 pm</td>
<td>Exhibits Open</td>
<td>Ziskind Lounge</td>
</tr>
<tr>
<td>8:30 am - 5:30 pm</td>
<td>Student Day (see p. 18)</td>
<td>See Whova</td>
</tr>
<tr>
<td>8:30 am</td>
<td>Announcements</td>
<td>Metcalf Large</td>
</tr>
<tr>
<td>8:45 - 9:45 am</td>
<td>Keynote: Dr. Letise LaFeir</td>
<td>Metcalf Large</td>
</tr>
<tr>
<td>10:00 am - 12:00 pm</td>
<td>Concurrent Sessions #5 &amp; #6</td>
<td>Session Rooms</td>
</tr>
<tr>
<td>12:00 - 1:00 pm</td>
<td>Lunch &amp; Chapter Meetings</td>
<td>Metcalf Large</td>
</tr>
<tr>
<td>1:00 - 2:00 pm</td>
<td>Stegner Lecture: Elizabeth James-Perry</td>
<td>Metcalf Large</td>
</tr>
<tr>
<td>2:30 - 4:30 pm</td>
<td>Concurrent Sessions #7 &amp; #8</td>
<td>Session Rooms</td>
</tr>
<tr>
<td>4:00 - 5:30 pm</td>
<td>Past Presidents’ Circle</td>
<td>See Whova</td>
</tr>
<tr>
<td>5:30 pm</td>
<td>Dinner and Auction</td>
<td>Metcalf Large</td>
</tr>
</tbody>
</table>

---

**Keynote Speaker**

**Dr. Letise LaFeir, New England Aquarium**

**The Role of Aquariums in Conservation and Stewardship**

Dr. Letise LaFeir serves as the Chief of Conservation and Stewardship at New England Aquarium, overseeing Animal Care, Conservation Learning, Community Engagement, Anderson Cabot Center for Ocean Life, and Conservation Policy. Dr. Lafeir is a distinguished expert in marine policy and conservation, with extensive experience in both government and nonprofit sectors.

She served as Senior Advisor to the Under Secretary of Commerce for Oceans and Atmosphere and the Administrator of NOAA in the Biden-Harris Administration. She is the founder and co-owner of Upwelling Consulting, LLC, and has held pivotal roles at the Resources Legacy Fund, Monterey Bay Aquarium, and NOAA’s Office of National Marine Sanctuaries. She is also a published author and certified scuba diver who has explored all seven continents and the seafloor.

---

**Join the virtual conversation with**

#NMEA2024!
Stegner Lecture: Elizabeth James-Perry

Connected to Ocean Life Forever: Wampanoag Perspectives on the Atlantic

2023 National Endowment of the Arts Heritage Fellow Elizabeth James-Perry is an enrolled Aquinnah Wampanoag educator who engages with Northeastern Woodlands cultural expressions primarily in shell-carving and Northeast wampum diplomacy, naturally dyed textiles and basketry and environmental restoration.

Her work explores the connections between sustainable arts and TEK, maritime lifeways, Native identity and sovereignty. James-Perry has a Marine Science degree from the University of Massachusetts, Dartmouth, a certificate in Digital Tribal Stewardship from Washington State University; she attended Cornell and University of New Hampshire’s satellite campus Shoals Marine Laboratory and Rhode Island School of Design Continuing Education. James-Perry is a Gay Head Whaling descendant and participated in the historic sailing of the Charles W. Morgan.

The Stegner Memorial Lecture is named in honor of Dr. Robert Stegner, a pioneer in marine education who died shortly after he retired from teaching at the University of Delaware. Bob hosted one of the first meetings of marine educators that would become the National Marine Educators’ Association, and was a central figure in charting the course for what marine education would become. His efforts also led to the creation of project COAST, one of the first marine education curriculum projects.

Over the years, this Memorial Lecture has evolved into a variety of presentations, including lectures, musical presentations, and visual displays.

Vineyard Wind is proud to be the sponsor of the 2024 Stegner Lecture.
<table>
<thead>
<tr>
<th>Time</th>
<th>ACADEMY</th>
<th>BACKCOURT</th>
<th>CONF AUDITORIUM</th>
<th>EAST BALCONY</th>
</tr>
</thead>
</table>
| 10:00 am - 11:00 am | **Rebecca Shoer**  
A City is a Climate Change Laboratory: Participatory science as a means for real-world project based learning | **Kara Doherty**  
Engaging Students in Marine Animal Bioengineering: Designing Prosthetics | **Bob Hyldburg**  
Ropeless Fishing: Educating the public about whale safe fishing | **Amy Neblett**  
Beach Engagement with the Public through Art and Science |
| 11:00 am - 12:00 pm | **Danielle Kamberalis**  
Marine Debris Action Plans: Creating Change in the Classroom | **Meredyth Sullivan**  
Using Otoliths to Better Understand Changing Ecosystems | **Juliet Fluty**  
Blue Horizons Global Initiative | **Rochelle Strauss**  
Navigating the Sea: Harnessing Illustrated Non-fiction Children’s Books to Build Ocean Literacy |
| 2:30 - 3:30 pm | **Brian Slopey**  
Marine Biology: An Innovative Hybrid Model | **Katie Lodes**  
EARTH (Education and Research: Testing Hypotheses): Engaging students using climate and ocean science data. | **Maya Pincus**  
Traveling through time with the International Ocean Discovery Program: Scientific ocean drilling reveals Earth’s past | **Kaleigh Ballantine**  
Drawn to learning: Creating accessible [...] |
| 3:30 - 4:30 pm | **Robin Lea**  
Engaging Youth to Develop Coastal Flood Resilience Strategies | **Miriam Sutton**  
Floating GO-BGC Data into the Classroom | **Victor Blanco**  
Scuba Diving in Extension: An innovative approach [...] | **Chris Payne**  
Leading the Way: How Cultivating Leadership [...] |
|              |                                              |                                              | **Laura Lilly**  
Communicating with Compassion [...] | **Alexandria Gillen**  
Marine Debris Communications Lab: Support Youth to Go From Raising Awareness to Inspiring Action with NOAA |

Sessions: Tuesday, July 30
# Sessions: Tuesday, July 30

<table>
<thead>
<tr>
<th>METCALF SMALL</th>
<th>ROOM 310</th>
<th>ROOM 312</th>
<th>ROOM 315</th>
<th>TERRACE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hannah Bell</strong>&lt;br&gt;Measureiing Ocean Literacy and More: Outcomes from a two day marine science education program for South African youth.</td>
<td><strong>Angela Dixon</strong>&lt;br&gt;Taking Sea Level Education, Awareness and Literacy to a New Level!</td>
<td><strong>Destiny Blow</strong>&lt;br&gt;Science on the Go: Quick Interactive Science Demos for All Ages</td>
<td><strong>Jennifer Cumbest</strong>&lt;br&gt;The Role of Evaluation in Programing</td>
<td><strong>Keri Kaczor</strong>&lt;br&gt;Daylighting Careers and Training [...]</td>
</tr>
<tr>
<td><strong>Alison Spasyk</strong>&lt;br&gt;What is watershed education? [...]</td>
<td><strong>Jolie Griffey</strong>&lt;br&gt;‘When did it happen?’ Sea-Level Rise game [...]</td>
<td><strong>Kristen Keane</strong>&lt;br&gt;Island STYLE- Systemic Training for Youth Leadership in the Environment: a collaborative effort between NOAA BWET, Artist Boat, the local school district, and natural resource organizations</td>
<td><strong>Shannon Donovan</strong>&lt;br&gt;Exploring Offshore Wind Energy</td>
<td><strong>Maria Madrigal</strong>&lt;br&gt;Diversifying Marine Biology Career Paths</td>
</tr>
<tr>
<td><strong>Jamie Steichen</strong>&lt;br&gt;First year experience course [...]</td>
<td><strong>Delanie Medina</strong>&lt;br&gt;Developing Sea-Level Rise Content [...]</td>
<td><strong>Cheryl Milliken</strong>&lt;br&gt;Sea Level Rise and Storm Surge [...]</td>
<td><strong>Maggie Allen</strong>&lt;br&gt;Tapping into heat and health resources [...]</td>
<td><strong>Molly Dushay</strong>&lt;br&gt;Diving Deep: Navigating Sustainability [...]</td>
</tr>
<tr>
<td><strong>Elizabeth Stratton</strong>&lt;br&gt;Learning across waters [...]</td>
<td><strong>Kasey Gaylord-Opalewski</strong>&lt;br&gt;An Ocean of Opportunity: Engaging Students in the Blue Economy</td>
<td><strong>Jennifer Kennedy</strong>&lt;br&gt;Inflatable Whales Present a Unique Learning Opportunity</td>
<td><strong>Allison Rosner</strong>&lt;br&gt;NOAA’s Bay Watershed Education and Training (B-WET) Program: New England</td>
<td><strong>Paul Dobbins</strong>&lt;br&gt;Advancing Seaweed and Shellfish Farming [...]</td>
</tr>
<tr>
<td><strong>Marianne Walsh</strong>&lt;br&gt;Coexisting with White Sharks: How research and education initiatives are working to change public perception</td>
<td><strong>Li-Ying (Laura) Lin</strong>&lt;br&gt;Integrate National Resources to Build a Ocean Literacy Benchmark Nation (OLBN) by OAC</td>
<td><strong>Vanessa van Heerden</strong>&lt;br&gt;Mapping Out Our World [...]</td>
<td><strong>Diana Payne</strong>&lt;br&gt;A Network of Long Island Sound Schools: Protecting the Sound One School at a Time</td>
<td><strong>Keri Kaczor</strong>&lt;br&gt;Seaweed in the Classroom [...]</td>
</tr>
<tr>
<td><strong>Patrick Kirby</strong>&lt;br&gt;From the Classroom to the Coast [...]</td>
<td><strong>Dani Dilullo</strong>&lt;br&gt;EnvironMentors: Ten Years of Lessons [...]</td>
<td><strong>Kristen Smith</strong>&lt;br&gt;The Gills Club: Creating the next gen [...]</td>
<td><strong>Ginny Carlton</strong>&lt;br&gt;Coastal Engineering Education: People, Place and Practice</td>
<td><strong>Vanessa van Heerden</strong>&lt;br&gt;Mapping Out Our World [...]</td>
</tr>
<tr>
<td><strong>Julia Wente</strong>&lt;br&gt;Analyzing Trends in Humpback Whale [...]</td>
<td><strong>Vanessa van Heerden</strong>&lt;br&gt;Mapping Out Our World [...]</td>
<td><strong>Kristen Smith</strong>&lt;br&gt;The Gills Club: Creating the next gen [...]</td>
<td><strong>Chris Flight</strong>&lt;br&gt;Aquaculture is Agriculture</td>
<td><strong>Kasey Gaylord-Opalewski</strong>&lt;br&gt;An Ocean of Opportunity: Engaging Students in the Blue Economy</td>
</tr>
</tbody>
</table>
## Schedule: Student Day

**Tuesday, July 30**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00 am</td>
<td>Registration</td>
<td>Stone Lobby</td>
</tr>
<tr>
<td>8:00 am - 5:00 pm</td>
<td>Exhibits Open</td>
<td>Ziskind Lounge</td>
</tr>
<tr>
<td>8:30 am</td>
<td>Announcements</td>
<td>Metcalf Large</td>
</tr>
<tr>
<td>8:45 - 9:45 am</td>
<td>Keynote: Dr. Letise LaFeir</td>
<td>Metcalf Large</td>
</tr>
<tr>
<td>10:00 am - 10:45 am</td>
<td>Student Icebreaker &amp; Get to Know NMEA</td>
<td>Metcalf Large</td>
</tr>
<tr>
<td>11:00 am - 12:00 pm</td>
<td>Concurrent Session #6</td>
<td>Session Rooms</td>
</tr>
<tr>
<td>12:00 - 1:00 pm</td>
<td>Lunch</td>
<td>Metcalf Large</td>
</tr>
<tr>
<td>1:00 - 2:00 pm</td>
<td>Stegner Lecture: Elizabeth James-Perry</td>
<td>Metcalf Large</td>
</tr>
<tr>
<td>2:00 - 2:30 pm</td>
<td>Afternoon Break - Student Day Checkin</td>
<td>Metcalf Large</td>
</tr>
<tr>
<td>2:30 - 4:30 pm</td>
<td>Concurrent Sessions #7 &amp; #8</td>
<td>Session Rooms</td>
</tr>
<tr>
<td>4:30</td>
<td>Student Day Concludes</td>
<td></td>
</tr>
</tbody>
</table>

Explore the asynchronous student presentations on Whova!
Wednesday, Aug 1

detailed Wednesday information on pages 20, 21, 35, 37, 37

7:30 - 8:30 am
Committee Meetings ........................................ See Whova

8:00 am - 12:00 pm
Registration Open ................................................ Stone Lobby
Announcements ..................................................... Metcalf Large

8:30 am
Keynote: Terry Wolkowicz ...................................... Metcalf Large

8:45 - 9:45 am
Concurrent Sessions #9 & #10 ............................... Session Rooms

10:00 - 12:00 pm
NMEA Awards Luncheon, Business Meeting,
and Chapter Basket Auction ................................. Metcalf Large

12:00 - 2:00 pm
Concurrent Sessions #10 & #11 ............................. Session Rooms

2:30 - 4:30 pm
New Board Meeting ............................................. See Whova

4:15 - 5:15 pm
Boston Harbor Cruise (ticketed event) ..................... See Whova

7:00 pm

Keynote Speaker

Terry Wolkowicz, Sound Explorations

Using Music and Tactile Sculptures to explore Marine Science with the Blind and Low Vision Impaired

For more than two decades Terry Wolkowicz has been designing innovative integrated arts educational curricula. For the past 13 years she has served as the Education Director for the New Bedford Symphony Orchestra, where she designs and performs educational programming in over 50 schools across Massachusetts and Rhode Island. In 2021, she started the nonprofit organization, Sound Explorations with composer, David MacKenzie where they have completed projects for NOAA, NASA, the Walter Munk Foundation for the Oceans, WHOI, Boston Museum of Science, and the Stellwagen Bank National Marine Sanctuary.

Join the virtual conversation with
#NMEA2024!

Wicked Good Marine Education
<table>
<thead>
<tr>
<th></th>
<th>ACADEMY</th>
<th>BACKCOURT</th>
<th>CONF AUDITORIUM</th>
<th>EAST BALCONY</th>
</tr>
</thead>
<tbody>
<tr>
<td>10:00 am - 11:00 am</td>
<td><strong>Angela Scapini</strong>&lt;br&gt;Navigating the Seas of Educational Innovation: Leveraging CGLL’s Peer-Review Process for Dynamic Curriculum Maintenance and Accessibility</td>
<td><strong>Warren Sevaetasi</strong>&lt;br&gt;Building Resilient Communities in American Samoa</td>
<td><strong>Madison Willert</strong>&lt;br&gt;Sea Grant’s Role in Developing Marine Debris Literacy (back to back sessions)</td>
<td><strong>Sandra Bilbo</strong>&lt;br&gt;Learning How to Block Print: A Mini Art Workshop (back to back sessions)</td>
</tr>
<tr>
<td>11:00 am - 12:00 pm</td>
<td>None</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2:30 - 3:30 pm</td>
<td><strong>Tina Miller-Way</strong>&lt;br&gt;Development of Gulf of Mexico Literacy Principles</td>
<td><strong>Madeleine Sherman</strong>&lt;br&gt;Increasing confidence in Marine Science [...]</td>
<td><strong>Alexandria Gillen</strong>&lt;br&gt;Let’s Talk Trash! Marine Debris Educational [...]</td>
<td><strong>Susan Tang</strong>&lt;br&gt;Creative Currents: Empowering Students to Create Art for a Sustainable Future</td>
</tr>
<tr>
<td></td>
<td><strong>Maya Pincus</strong>&lt;br&gt;You mean to tell me... Social media can improve [science] literacy?</td>
<td><strong>Avery Beck</strong>&lt;br&gt;Designing an Inclusive Program for a Vision Impaired Audience</td>
<td><strong>Laura Bailes</strong>&lt;br&gt;Instilling Place-based Environmental Literacy [...]</td>
<td></td>
</tr>
<tr>
<td>3:30 - 4:30 pm</td>
<td><strong>Brianna Andrews</strong>&lt;br&gt;BRACKISH (Biodiversity, Relationships, and Aquatic Chemistry Knowledge in Saline Habitats)</td>
<td><strong>Elisa Caref</strong>&lt;br&gt;Classroom Teacher Collaboration for Place-based Curriculum Design in NYC</td>
<td><strong>Tracy Hajduk</strong>&lt;br&gt;Bring Ocean Literacy into Your Classroom with National Marine Sanctuaries</td>
<td><strong>Kristen Keane</strong>&lt;br&gt;Encouraging Student Voice and Choice while Developing Driving Questions and Student Designed Field Adventures</td>
</tr>
</tbody>
</table>
## Sessions: Wednesday, July 31

<table>
<thead>
<tr>
<th>METCALF SMALL</th>
<th>ROOM 310</th>
<th>ROOM 312</th>
<th>ROOM 315</th>
<th>TERRACE</th>
</tr>
</thead>
</table>
| **Yolanda Sánchez**  
Strengthening Ocean Education in Latin America: RELATO’s Experience | **Nancy FitzGerald**  
Shunt of Shuttle? Introduce your students to marine viruses and their impact on the ocean’s role in the carbon cycle. | **Mary Carla Curran**  
Teaching students about the links between marine food webs, Harmful Algal Blooms (HABs), and food safety | None | Sonia Ahrabi  
Nature-Based Programs at Aquariums |
| **Aimee Bonanno**  
Working Collaboratively Toward Equity, Access, and Belonging in Ocean Science | **Savanna Finley**  
Bringing the Estuary into Your Classroom: A Guide on Extending Estuary Learning Through Classroom Aquariums | **Monika Pelz**  
Data from the deep, Ocean Science Integration for all. | None | Laura Moore  
Marine Investigators: Implementing inquiry-based, experiential learning with elementary learners to foster creative exploration and awareness about marine and coastal environments. |
| **Margrethe Serres**  
Marine Science Research [...] | **Carly Carmack**  
No Marine Science Class? No worries! | **Jennifer Walker**  
Teaching Ocean Literacy through the Lens of Marine Mammals | None | Valerie Cournoyer  
Using Optical Illusion Art to Communicate Science Ideas |
| **Bethany Smith**  
Pathways to Ocean Science Careers [...] | **Kelsea Carmichael**  
Marine Robotics: A Lesson Plan Using LEGO | **Bjorn Grigholm**  
World Ocean Explorer: Free Interactive & Immersive Learning for the Classroom | None | Katie Lodes  
Getting out in the world to bring [...] |
| **Holly Morin**  
Speed Dating with the Blue Economy [...] | **Grace Simpkins**  
Ocean Currents and Overflows: hands-on physical oceanography in the classroom | None | Dominika Wojcieszek  
Advancing Ocean Literacy Through [...] |
| **Morgan Treon**  
Ripple Effect: Using Unconventional Partnerships to Increase Impacts of ‘Wicked’ Marine Education | **Dominika Wojcieszek**  
Advancing Ocean Literacy Through [...] | None | Shadaesha Green  
Empowering youth to take action [...] |
### Field Trips

**Thursday, July 27**

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Transportation</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00 am – 5:00 pm</td>
<td>Crane Beach and Guided Hike*</td>
<td>Coach Bus</td>
</tr>
<tr>
<td>8:00 am – 5:00 pm</td>
<td>Crane Beach and Kayak Tour*</td>
<td>Coach Bus</td>
</tr>
<tr>
<td>8:00 am – 5:00 pm</td>
<td>WHOI and Waquout Bay (Cape Cod)</td>
<td>Coach Bus</td>
</tr>
<tr>
<td>9:00 am – 12:00 pm</td>
<td>Harvard Museum of Natural History</td>
<td>Subway/Uber</td>
</tr>
<tr>
<td>10:00 am-1:30 pm</td>
<td>Whale Watch to Stellwagen Bank</td>
<td>Subway/Uber</td>
</tr>
<tr>
<td>10:00 am-2:00 pm</td>
<td>Duck Boat/Museum of Science</td>
<td>Subway/Uber</td>
</tr>
<tr>
<td>12:15 pm-1:45 pm</td>
<td>Schooner Tour of Boston Harbor</td>
<td>Subway/Uber</td>
</tr>
</tbody>
</table>

*Boxed lunch provided

---

**Field Trip Questions?**

The Registration Desk (Stone Lobby) has field trip information including meeting locations, what to bring, and more!

---

**Vineyard Wind is a Proud Sponsor of the 2024 NMEA Conference!**

Vineyard Wind is committed to educating communities that are home to Vineyard Wind 1, the nation’s *first* large scale offshore wind project!

Our Benefits
- Ratepayer Savings
- Job Creation
- Emissions Elimination
- Protecting Right Whales
- And Many More!

Learn about our commitment to clean energy, workforce development, and education on our [website](#).
B-WET is an environmental education grant program that promotes locally relevant experiential learning for K-12 students and related professional development for teachers. Learn more at https://www.noaa.gov/office-education/bwet

Boston Harbor citycruises™

Ocean River Institute
JOHNETTE D. BOSARGE MEMORIAL AWARD

The Johnette D. Bosarge Memorial Award is awarded to NMEA members who have a record of service and dedication to NMEA or the local chapter; exhibit loyalty, efficiency, and enthusiasm for marine and aquatic education; and consistently earn the respect of their peers. This award is in loving memory of Johnette D. Bosarge, who served as our administrative assistant from 1999-2013.

JAMES CENTORINO AWARD

The James Centorino Award for distinguished performance in marine education at a regional and/or national level is awarded to NMEA members who have actively participated in NMEA and demonstrated dedication to marine issues over a career. This award was named in the memory of Jim Centorino, an inspirational and passionate marine educator who taught at Salem State College, co-founded the Massachusetts Marine Educators and later the National Marine Education Association. Through this award, we at NMEA continue to remember his contributions to marine education.

OUTSTANDING TEACHER AWARD

The Outstanding Teacher Award for effective and innovative classroom teaching at any level is awarded to NMEA members who are classroom teachers that have demonstrated innovation in introducing marine science into materials, classroom activities, and/or topics.

MARINE EDUCATION AWARD—INDIVIDUAL

The Marine Education Award for distinguished performance in marine education by professionals is awarded to educators who are not classroom teachers that have demonstrated innovation in introducing marine science into materials, activities, and/or topics.

MARINE EDUCATION AWARD—OUTSTANDING ORGANIZATION

The Marine Education—Outstanding Organization Award for outstanding work and leadership by an organization in any aspect of marine education at the local, regional, or national level can be awarded to an organization, institution, or business that demonstrates a strong commitment to supporting marine education through actions and/or financial commitments. Actions may include supporting marine education groups, offering conferences, developing and/or delivering marine-based educational activities and workshops, and promoting initiatives such as beach cleanups.

YOUTH LEADERSHIP IN MARINE CONSERVATION

The Youth Leadership in Marine Conservation Award for the furthering of marine science and conservation through education, research, advocacy, and/or community leadership is awarded to individuals or youth groups 18 years old or younger who have demonstrated passion for protecting marine environments, educated the public about the importance of the marine environment, or advocated for the conservation and protection of marine environments and/or individual marine species.

HONORARY MEMBERSHIP AWARD

The Honorary Membership Award is awarded to a current or past NMEA member who has actively participated in NMEA, has demonstrated leadership through their work in marine education, and has a distinguished career in teaching, research, or service in marine education. Honorary Membership shall be the highest recognition that the Association can offer and comes with a life membership to NMEA.

Nominations are accepted all year round! https://www.marine-ed.org/awards
The NMEA Strategic Planning team is looking for input from you! Share your thoughts at the link here or check Whova for times to engage with Local Concepts, our strategic planning partner. Those that complete the survey will be entered into a raffle to win a free registration to NMEA 2025 in Lafayette, LA.

Chapter Baskets

Chapter representatives should set up baskets in the Metcalf Large Ballroom on Wednesday July 31st, before 8:30 am.

Chapter basket tickets may be purchased in advance at the Registration Desk and from committee members during lunches. We accept cash and credit card payment for chapter basket tickets.

Tickets will be $1.00 each, $5.00 for 6, or $10.00 for 12.

The baskets will be on display in the Metcalf Large Ballroom on Wednesday at lunch. Place your tickets in the bag by the Chapter Baskets you hope to win.

Winning tickets will be drawn at the NMEA AGM & Awards on Wednesday, at 12:45 pm. Winners can collect their baskets after the meeting.
CHANGE IS CLOSER THAN YOU THINK

WILDHOPE

NOW STREAMING AT WILDOPE.TV

hhmi | Tangled Bank Studios

INSPIRED BY THE TRUE STORY OF AN EXTRAORDINARY FRIENDSHIP

JEAN RENO

MY PENGUIN FRIEND

AUGUST 16
ONLY IN THEATERS

#MyPenguinFriend  @RoadsideAttractionsFilms  mypenguinfriend.com
Asynchronous Recorded Sessions - on Whova

NMEA President’s Chair

NMEA 101. Are you new to NMEA? Are you looking to become more active in the organization? Do you know what NMEA is doing to advance our mission around the world? Please join us to learn about NMEA’s history, current projects, and future goals, and how you can become more involved. Meet our leadership team and make connections, old and new.

Sara Chaves Beam, Chesapeake Bay Governor’s School
Two Teachers Walk into a Marine Lab: The Effects of High Temperatures and Low pH on the Development of Spiny Dogfish (Squalus acanthias) and Lego Embryos. Sara Chaves Beam from Virginia and Megan Begley from Maine collaborate in their research studying the effects of ocean acidification and warming waters on the development of Spiny Dogfish (Squalus acanthias) and Lego Embryos. They have created a series of lessons that communicate the science of this activity with ready-to-go for your classroom. This session will share their six lessons and the basic findings of the study. great for New England marine science, environmental science and secondary and early undergraduate classes. Lesson topics all tie into the lobster study. Bathymetry of the Gulf of Maine analysis activity. Ocean Acidification activity. Lobster Life Cycle Activity. Water Quality Activity. Experimental Design Activity and Lobster Embryo Respiration Data Lab. Keywords: ocean acidification global warming lobsters data activity. Additional Authors: Megan Begley, Teacher; Emily Rivest. Virginia Institute of Marine Science

Sean Chamberlin, Fullerton College
Our World Ocean: A Perspective - Ocean Literacy. Our World Ocean, a free downloadable textbook for students (8-16), researchers, and informal audiences, provides a student- and teacher-friendly approach to understanding ocean science as it’s practiced by oceanographers in the twenty-first century. This presentation will focus on the textbook’s benefits for student engagement, its pedagogical approach to teaching ocean literacy, and its flexible and plentiful resources that make an instructor’s life easier. It will illuminate the critical role of the ocean in our global ecosystem and ways we can foster a deep and enduring understanding of the ocean within our students. Keywords: ocean literacy, science communication, diversity.

Sandra Lund, Blue Anew Network
Combating “Ocean Blindness” - the lack of awareness and understanding about the ocean’s importance and impact on the human population. This presentation will illustrate how the combination of arts and science can address in their part do the world.

Student Asynchronous Recorded Presentations - on Whova

Sophie Baker, Jack Owens, Northwest Academy
Have you heard of pipefish? How they surprisingly mitigate the effects of ocean acidification.

This review paper used ocean scientists to theorize how to address the effects of ocean acidification on seagrass environments and observe the pipefish, a species of interdependent species relationships. Ocean acidification occurs when carbon dioxide dissolves into the ocean and forms carbonic acid, reducing ocean pH. This affects survivability of coral reefs and marine-calculifying organisms, a key food source for Syngnathus. However, seagrass meadows, the pipefish, are carbon sinks, filters low-pH ocean water when photosynthesizing by absorbing carbon dioxide. Pipefish, among other animals, help control sea urchin populations that eat holdfasts, preventing the destruction of seagrass. This symbiotic relationship mitigates ocean acidification’s global threat.

Onyx Brisbois; Asher Fritts-Weeks, Northwest Academy
A Synthesis Project of the Effects of Ocean Acidification on Spiny Dogfish (Squalus acanthias) This synthesis project was done to showcase the effects of ocean acidification on Squalus acanthias, commonly known as the Spiny Dogfish. The key factors of the presentation included the effects on: hunting capabilities, predator and prey relations, and reproduction. The negative effects on S. acanthias were the impact on the dermal denticles, scarring that coat the skin in a rough tooth-like substance. They are utilized in sharks to increase swimming speeds, and stealth. Increased CO2 can lead to denticle corrosion, compromising hydrodynamics and overall function. Overall the effects on S. acanthias are potentially grave in future ocean biodiversity.

Onyx Brisbois, LouAnne Steele, Northwest Academy
A Case Study of the Causes of Selachiahabra in Largely Oregon Residents, with Specific Focus on Media Consumption, Attitudes, and Knowledge. Sharks represent a vital part of the health of marine ecosystems. Larger sharks such as the great white shark act as apex predators, maintaining a balance in marine ecosystems. A field scan to statistical data revealed a population decrease of more than 70% in the last fifty years (Carlson, 2023). The research presented herein will explore how humans react to sharks, and how their age and media consumption affect their knowledge of sharks. This survey data provides a broad overview of feelings toward sharks, compared to their age, media consumption, and education level. Providing vital information to researchers on how to better educate the public.

Cahli Daniels; Liddy Clever, Homelife Academy
Kids in Conservation. Can kids and youth really make a difference in conservation for our oceans? Absolutely! We will discuss how educators are using hands-on activities, such as science fair projects, to create in our students, our community, and our country. The students are our future and empowering them to make a difference is crucial.

Citiatl Méndez; Delfina Cruz Flores, Universidad Nacional Autónoma de México
Ola Metrópoli Arte-ConCiencia desde la Gran Ciudad de México. En esta sesión les vamos a presentar el trabajo que realizamos en Ola Metrópoli y cómo es que estamos influenciando a las comunidades a través de la creación de pequeños y grandes proyectos, fomentando el respeto por los océanos, el arte y la cultura. Este evento busca sensibilizar sobre la importancia del océano en nuestras vidas y cómo podemos actuar para preservarlo.

Julianne Taylor, Bar Harbor Whale Watch; Tammy Silva, PhD, Marine Research Ecologist, SBMHS; Andrew Thaler, PhD: CEO, Blackbeard Biological & Co-founder of Oceanography for Everyone; David Wiley, PhD: Research Ecologist, SBMHS
Whale Watching Vessels Serving as Platforms for Marine Science Research & Education. Whale watch operations throughout the NE US collaborated with OpenCTD, BOEM, and Stellwagen Bank National Marine Sanctuary to deploy low-cost CTDs to collect salinity, temperature, and depth data. Project goals were to engage the community in oceanographic data collection and to increase spatial and temporal resolution of oceanographic data in the NE US. Casting CTDs during whale watch cruises allowed passengers to observe and learn about methods of collecting ocean data. Additionally, the CTDs provided an opportunity for whale watch naturalists to discuss climate change and its impact on physical and biological ocean ecosystem dynamics. This project, Community Oceanography While Watching Whales, continues to provide open-source data for educators, students, and the greater marine science community

Robin Lea, Gulf of Maine Research Institute
Sea to School Curriculum from The Gulf of Maine Research Institute. Through the Food Vision Prize Award from the Kendal Foundation, CMRF worked with cafeteria staff, teachers and culturally diverse chefs in Maine to develop cafeteria and classroom resources focused on promoting seafood in schools and highlighting the environmental, economic, nutritional and cultural importance of local fish and ocean products. Learn about the Local Seafood in Maine Schools curriculum and explore ways it can be adapted to your region or setting.

Ya-Chien (Claire) Chou, Taiwan Marine Education Center of National Taiwan Ocean University; Ching-Hung Cheng-Chieh
Ocean Literacy in Primary Schools: Cartoon Animation on Marine Science. Marine Education Issue one is one of the nineteen topics stipulated in the “General Outline” of Taiwan’s education curriculum. Ocean literacy for primary school students covers the basic concepts and knowledge of the ocean and integrates the ocean attitude of ‘know the ocean, be close to the ocean, and love the ocean’ into the key points of each field. The project conducts digital Marine Education learning resources for primary school. There are more than 50 cartoon animations and videos. The cartoon animations to be put on the shelves include knowledge node construction, check, lesson plans. 2-3 question assessment test questions, etc. Additional Authors: LING-YA, HUNG. Assistant Research Fellow of Taiwan Marine Education Center. NTOU

Jack LaBar; Kai Newbald, Northwest Academy
Ice Cores: Nature’s Cool Past. Ice cores are drilled-up pieces of ice made of layers upon layers of snow that scientists then study. They trap air bubbles that can be measured to give scientists a picture of past atmospheric conditions. This past climate indicator is a useful tool for scientists studying paleoclimatology. One of the most crucial questions is the study of the atmospheric greenhouse gases in the past. One of the more interesting ice cores was the West Antarctic Ice Sheet Divide Ice Core which had a layer of thick crust aslanted in it. As the deepest U.S. ice core, it suggested volcanic activity in the past 68,000 of ice it was from.

Anna Marks; Arwyn Stech, Northwest Academy
Synthesis Project on the Negative Outcomes of Ocean Acidification on Dungeness Crab (Cancer magister) A secondary consumer that inhabits the Pacific Northeast coast, and is a keystone species in the Pacific Northwest. Ocean acidification affects Dungeness crabs at all life stages. A mixture of stressors impact them: hypoxia, calcium scarcity, and harmful levels of low pH. These factors stunt chemo-sensory abilities and shell structure formation. Impacted crabs face issues with survival development, and decreased ability to regulate movement and interact successfully with other organisms. In order to preserve this critical species, governing bodies must implement sustainable marine initiatives and fossil fuel regulations.

Will Staggers; Griff Urang, Northwest Academy
A scientific exploration of the current and future effects of ocean acidification on the yellowfin tuna (Thunnus albacares). Our project summarizes research on ocean acidification's impact on yellowfin tuna (Thunnus albacares). Decreases in seawater pH negatively affects yellowfin tunas, a species of larval stages. An experiment by the University of California’s Marine Science Institute found that yellowfin larvae exposed to projected ocean pH levels of 7.5 to 73 over a week sustained damage to critical organs, particularly the pancreas and eyes. Yellowfin may face dwindling populations in the next 20 years due to a decreased percentage of larvae reaching sexual maturity. If industrialized countries do not reduce current carbon dioxide emissions, our oceans will no longer sustain healthy ecosystems.

Kodi Young; Miles Potter; Henry Tuttle, Northwest Academy
Analyzing the direct and indirect effects of ocean acidification on the life cycle, reproduction, and survival of the Dungeness Crab (Metacarcinus magister). This presentation seeks to describe the direct and indirect effects of ocean acidification on the Dungeness Crab. This is relevant to the ocean absorbing carbon dioxide which has led to a 26% decrease in the pH of the ocean. Such conditions can cause corrosion in the crab shells, while greatly affecting the life cycle of coral reefs, shellfish, and other marine organisms. Ocean acidification is most prominent on the Pacific Coast of North America, the primary environment for the Dungeness crab. Potential solutions to decreasing ocean acidification include reducing fossil fuel consumption, reducing atmospheric, and transitioning to sustainable energy resources.
NMEA 2024 • Boston, MA

Session Descriptions - Monday

Concurrent Session #1: Monday, July 29—10:30 am – 11:30 am

Tami Lunsford, Newark Charter Jr./Sr. High School

[ACAD] Climate Change PBL: Creating the Ocean/Coast We Want. I modified my Project Based Learning Marine Science course again this year: both sequence and the climate change driving question. Come learn how I incorporated the UN Ocean Decade, AI, and climate change pedagogy into the new unit.

Sarah Schoedinger, NOAA Office of Education; Diana Payne

[BCT] Don’t be a Terrestrialist! Incorporating Ocean Science Concepts in a U.S. Standards-Based Teaching Environment (Part 1 - no requirement to attend both sessions). Join us to learn how to incorporate Ocean Literacy into NGSS-aligned/adapted instruction. In this first of two sessions, we’ll introduce the Ocean Literacy framework, a useful tool in teaching about the ocean, while also aligning with/addressing the NGSS. As a result, you and your learners will have a better understanding of ocean science concepts, be able to better communicate about the ocean, and apply what you’ve learned to make informed and responsible decisions about the ocean and its resources.

Participants will receive a copy of A Handbook for Increasing Ocean Literacy. This is one of two linked sessions. Additional Authors: Catherine Halversen, emerita Senior Program Director, Lawrence Hall of Science. University of California Berkeley. chavler@berkeley.edu

Joan Muller, Waquoit Bay National Estuarine Research Reserve; Barbara Speckter, Todd Crubek

[CONF] Watershed Stewardship in Action: Defend Students on the Estuary. Imagine if science terms were spelled out to you letter by letter - how would that impact your ability to learn? For native American Sign Language students, fingerspelling also requires them to process content in an alternate language. English. Come learn from a unique partnership formed to work on reducing these barriers through NOAA’s Teachers on the Estuary program. Get pointers for working with deaf students and learn about the Defend Education graduate program at Boston University. Learn hands-on access the signs on line and try a couple of the conceptual signs yourself. Dr. Speckter will share personal insights on growing up deaf and pursuing a STEM career.

Tressa Arbrow, NOAA Fisheries West Coast Region; Maile Sullivan

[EA7] Using Whale Entanglements as an Anchoring Phenomenon for NOAA Science Camp. From 2014-2016, we implemented NOAA’s Climate Change PBL project (Climate Change in California) in California. In 2024, the whale entanglements were used as an anchoring phenomenon for NOAA Science Camp in Seattle. WA. Through a series of investigations, NOAA office activities, sense-making discussions, and lots of fun and games, campers drew conclusions about why and how so many whales were entangled. This session will take participants through some of the activities and discussions students engaged in, feature student projects, and share best practices and lessons learned for using a real world climate-policy conundrum in an informal marine science education setting. Additional Authors: Lisa Hinuki-Raring, Education Coordinator. NOAA Alaska Fisheries Science Center; Casey Ralston, Education Coordinator. NOAA Northwest Fisheries Science Center

Kathy Fuller, Prince George’s County Public Schools

[MET] A How to Guide for Leveraging NMEA Resources for Young and Emerging Professionals. If you are a young or emerging professional, someone who has just started working in the field or someone who is finishing their training or degree and will soon be working in the field, this presentation is for you! Learn what NMEA can do for you and how you can leverage those assets to support your career and your students. The session will also include time for networking with other young and emerging professionals. This session is sponsored by the NMEA Student Engagement Committee.

Lindsay Mossa, American Geosciences Institute

[NSE] Navigating Sustainable Oceans for a Resilient Future. Participants will engage with hands-on activities developed for middle and high school to introduce sustainability and its connections to water quality and ocean health. These activities were written by the American Geosciences Institute as part of our Education for Sustainable Development (ESD) Kits, which each focus on a specific United Nations Sustainable Development Goal (SDG). Participants will do activities from ESD Kit 12: Consuming Sustainably and ESD Kit 13: Impacts of Climate Change but will gain access to all four ESD Kits (including ESD Kit 6: Access to Clean Water and ESD Kit 7: Energy In Our Lives and Communities). Additional Authors: Lauren Brase, Ed Robec

Deborah Rose, Deborah Lee Rose

[NSE] Reading Ocean STEM with Young Children. From breaching whales to waddling penguins, from marine scientists in the field to marine birds threatened by climate change, STEM children’s books link ocean literacy to reading literacy. With limited STEM elementary learning time, books that engage readers with marine species and ocean science help teachers both educate and inspire children who may not otherwise experience curiosity or excitement toward the ocean and climate. This session will feature a few books and related activities to help educators and scientists alike begin to work through the barriers of literacy and ocean literacy. In Deborah’s Penguins Ready to Go. Go. Go!, including Antarctic photos never published in a children’s book before.

Pamela Blanchard, Louisiana State University School of Education; Alvera McMillan, Dani Dilullo

[TER] Putting Down Roots in a Changing Landscape. The LSU Coastal Roots Program (https://www.lsu.edu/coastalroots) works with teachers in grades 3-12 from 47 schools across 17 parishes in South Louisiana to combine science-based learning, native plant cultivation, and environmental stewardship to help their students become environmentally literate about coastal issues in Louisiana. Students grow a variety of native tree seedlings and beach grass plugs in school-based nurseries to learn how they can help create and sustain coastal habitats. Maintain habitat diversity, and provide food for coastal animals and birds. Come learn how to put science-based learning into the new unit.

Sarah Schoedinger, NOAA Office of Education; Alvera McMillan, Dani Dilullo

[312] Luisa Blanchard, Louisiana State University School of Education; Alvera McMillan, Dani Dilullo

Concurrent Session #2: Monday, July 29—12:30 – 1:30 pm

Annette Brickley, STEMming the Gaps Consulting

[ACAD] Ocean & Climate Story-Telling with Data. Data literacy needs to be scaffolded just like reading literacy. In this workshop, we will practice some ways to help students move beyond collecting their own data to analyzing and interpreting larger, online data collected by scientists. This interactive webinar will use authentic ocean ecosystems data and will offer different practice strategies and online techniques to use with students. The LTER Schoolyard program at Woods Hole Oceanographic Institution offers this workshop to support an ocean and climate Data Jam in the Data Jam, the challenge for students is to graph, analyze, and interpret one of the provided data sets collected by scientists, on oceanographic research cruises, on the Northeast US Continental Shelf, south of Cape Cod. Their goal is to creatively present their work as a compelling data story or message for the general public through song, dance, paint, or wherever their creative interpretation by Middle and High School students are wild!

Susan Haynes, NOAA Ocean Exploration/Groundswell; Rick Reynolds, Diana Payne, Sarah Schoedinger

[BCT] Don’t be a Terrestrialist! (Part 2 - no requirement to attend both sessions.) How to apply the Ocean Literacy Framework in a U.S. Standards-Based Teaching Environment. Using two NOAA Kit materials, participants will learn about the Ocean Literacy Framework in Science and Geography (S&S) and NGSS alignment as articulated in the Ocean Literacy Framework. Learn how the S&S was referenced to design a new Ocean Mysteries curriculum from the Office of National Marine Sanctuaries and how it was applied to recently developed Student Investigations from Ocean Exploration. Featured lessons will focus on climate (Essential Principle #3) and deepsea ecosystems (Essential Principle #5). Participants will receive a copy of A Handbook for Increasing Ocean Literacy. This is one of two linked sessions. Additional Authors: Catherine Halversen, emerita Senior Program Director and Co-Director of MARE. University of California Berkeley and UC Berkeley’s Lawrence Hall of Science. chavler@berkeley.edu; Tracy Hajduk, National Education Coordinator. NOAA’s Office of National Marine Sanctuaries

Jennifer Maucher Fuquay, NOAA; Steve Morton, Barbara Speckter

[CONF] Expanding Accessibility to Participatory Science and STEM through American Sign Language. For Participatory Science to thrive we must provide accessibility to a wide spectrum of individuals and communities. NOAA’s Phytoplankton Monitoring Network (PMN), a national volunteer network for the monitoring of harmful algal blooms (HABs), is committed to increasing accessibility to the deaf and hard of hearing by developing tools used in training new volunteers so that engagement and participation is available to a wider scope of our population. Working with Atomic Hands, whose mission is to contribute to the movement of bringing STEM alive in American Sign Language (ASL) and supporting current and future generations of deaf STEMists, we are creating new ASL signs for terminology regarding HABs. Additionally, Atomic Hands is translating PMN training videos, in which participants learn how to collect and analyze samples for the presence of potentially harmful organisms, PMN and our Atomic Hands partners will discuss the translations of training materials into ASL and increase awareness of other ASL resources for STEM in education.

Keri Kaczor, Maine Sea Grant

[CONF] Bringing the Sea to Inland and Rural Communities. The pandemic exacerbated gaps as far access, opportunities, academic achievement and outcomes. Today, Maine children continue to struggle academically to transition into critical post-secondary education opportunities and are increasingly facing health crises than before the pandemic began. Inland and rural communities are hydrologically linked to the sea yet are under-resourced with little access and opportunity to explore connections to the ocean and climate. This project is nimble and offers an array of options to engage with ocean and climate science in the field and classroom. Stipends, travel, equipment, lessons/ activities, mentorship, co-teaching, and more is provided to lessen the barriers to sea exploration.

Alvera McMillan, Louisiana Sea Grant; Vanessa van Heerden, Dani Dilullo

[CONF] Louisiana Wetland Days: Standard Aligned Learning in a Place-Based Context. Recognizing the need for high quality place-based learning, Louisiana Sea Grant has been cultivating partnerships with school districts, universities, state agencies, and many others to create outdoor learning opportunities. Funded through the National Academies of Science Gulf Research Program, Wetland Days are customized explorations of habitats near participating schools. Hear some of the successes and challenges Sea Grant has encountered as they share information on how Partnerships are united by the NOAA Education Strategic Plan, to be updated in 2025. The proposed new plan will include these goals: 1) teaching and learning; 2) taking action; 3) navigating career pathways; and building and sustaining NOAA Education. We’d like to hear from the marine education community (you!) about the proposed plan and emerging issues. We hope NOAA Education network members, NOAA partners, other field educators, and anyone interested in ocean and marine resources will attend! This session is sponsored by the NMEA Student Engagement Committee.

Andrea Sassard, NOAA Office of Education; Christos Michalopoulos

[EA7] NOAA Education Community Town Hall. NOAA’s education portfolio includes educators from across NOAA. National Estuarine Research Reserves, Sea Grant, and many partners. Our programs are united by the NOAA Education Strategic Plan, to be updated in 2025. The proposed new plan will include these goals: 1) teaching and learning; 2) taking action; 3) navigating career pathways; and building and sustaining NOAA Education. We’d like to hear from the marine education community (you!) about the proposed plan and emerging issues. We hope NOAA Education network members, NOAA partners, other field educators, and anyone interested in ocean and marine resources will attend! This session is sponsored by the NMEA Student Engagement Committee. Additional Authors: Christos Michalopoulos, NOAA Office of Education, christos.michalopoulos@noaa.gov
Session Descriptions - Monday

Ashley Eaton, University of Vermont; Nate Drag, Kristin TePas

[MET] From Port to Praxis, a study evaluating the impact of vessel-based professional learning programs on K-12 teachers. This interactive session will share the results of a doctoral dissertation study that evaluated NOAA Education and NOAA Sea Grant vessel-based teacher professional learning programs. During the session participants will have the opportunity to get hands-on with some of the research and methods included in the study (e.g., Great Plankton Race). This study aimed to gain a better understanding of the impact vessel-based programs have on self-reported K-12 teaching efficacy, watershed understandings, and relationships to place. While this study focuses on research vessel-based programming, the results and methods of this study have the potential to inform and build upon best practices in freshwater and marine education more broadly.

Carolyn Kovacs, Florida Sea Grant / University of Florida

[310] Hands-on Activities for Plastics and Marine Debris Education. This session will guide participants through educational activities centered around plastics, marine debris, and choices that individuals can make when it comes to the items we use. Through a series of experiments and games, participants will have the opportunity to make and test hypotheses, examine real world data, and reflect on their use of single-use plastics. Participants will gain access to curricula for three sets of activities that can be used in the classroom or in conjunction with a beach cleanup and be adapted for a wide range of ages. Keywords: Hands-on Activities for Plastics and Marine Debris Education. Additional Authors: Maia McGuire, Associate Director, Extension and Education, Florida Sea Grant

Anne Smircina, Stellwagen Bank National Marine Sanctuary

[312] Partnering for Science and Art. For more than 20 years, Massachusetts Marine Educators and Stellwagen Bank National Marine Sanctuary have offered a marine art contest. The program has introduced K-12 students to the diversity of species in our marine backyard. In this session we will explore some interdisciplinary projects combining art and marine science (including the role of tangibles and marine sanctuaries and/or other government organizations, e.g. marine reserves, national parks) that can develop their own regional art competitions. Samples of creative art generated by winners from past contests will be on display at the session and at a conference exhibit.

Lisa Lawrence, VIMS-VA Sea Grant; Sarah Nuss

[TER] Create Your Own Splash with a VA SEA Spineff in your State! What is VA SEA ask you? It’s not just a project -- it’s a tidal wave of innovation! VA SEA stands for Virginia Scientists & Engineers Alliance. Educators Alliance, an ocean literacy initiative where passionate science graduate students transform their research into captivating K-12 lesson plans. Dive deeper into the blueprint of VA SEA’s success and discover how you can adapt it to make waves in your state. Unleash the potential of your local graduate students (or scientists) and watch them inspire your next generation of scientists and decision-makers! We’ll also share some of our fan-favorite lesson plans.

Kate Schafer, Children's School of Science

[ACAD] Teaching Climate Change via Understanding, Connection and Empowerment. Students often struggle with climate education, yet climate education has left them with a mixture of panic and frustration from the oft-repeated refrain “we created the problem and now it’s up to you to fix it.” As educators, it is vital that we work to combat these feelings using three basic strategies that can be employed in different ways with a focus on ocean literacy 1. Teach the science, and give students the tools they need to talk about the problem. 2. Get out and experience nature, and give students a connection to the natural world, and 3. Focus on solutions that involve an interdisciplinary hands-on approach, and help them to realize that positive change is possible. Using these strategies we can create understanding, connection and empowerment.

David Christopher, Delaware Sea Grant / Univ. of Delaware; Diana Payne

[BCT] Practical Applications: Environmental, Ocean, and Great Lakes Literacies and Beyond! Confused by all the ‘literacies’ out there? Wondering how you can take some of these complex topics and incorporate them into your school or workplace? Join us for an interactive exploration of the variety of literacies and real-world examples of their use. We’ll consider topics such as Ocean Literacy as the global cornerstone of our relationship with the ocean, nuances of environmental literacy, and making local connections. Examples may include connections to English Language Arts, the UN Ocean Decade, NMSA’s Ocean and Climate Literacy Champions, regional environmental education initiatives, educator professional learning, case studies from around the world, and more!

Michelle Cusolito, Freelance/Simmons University; Karen Young

[CONF] Riding the Wave from Ocean Science to Outreach. So you’re going into the field or visiting the lab of a student whose work fascinates you. How can you bring that experience to life through a picture book, middle grade nonfiction book, or comic profile? Michelle and Karen – both educators, creators, and award-winning authors – share how they translate complex science into compelling science stories for young people. You’ll emerge from this session with hands-on projects that include a list of resources, bookmarks, and trading cards – as well as inspiration and practical ideas for starting your own outreach, engagement, or book project.

Tina Miller-Way, Dauphin Island Sea Lab

[TEL] Strengthening the social, cultural, and biological capital of the Gulf of Mexico through K-12 student engagement in science. Postcards from the Past. Join us to explore a STEAM classroom-based program in which students explore anthropogenic change by adopting a radiocarbon-dated clam and investigating how different human cultures used Gulf of Mexico resources and coastal areas during their clam’s lifetime. With inspiration from prerecorded videos from Alabama art educators, students express their understanding in a mixed-media Postcard from the Past. In this session, we’ll introduce the program, summarize the embedded scientific research, review participating student and teacher impressions, and discuss how you can get involved. We’ll also create our own Postcard from the Past using one of several art techniques. Additional Authors: JoAnn Moody, Paul Hamrick

Peter Tebeau, Tall Ships America; Holly Buresh, Chloe Grey Smith

[MET] STEM Education Under Sail – Science of the Sea & Ship in an Inspiring Venue. Traditional sailing vessels present a challenge and opportunity for providing STEM education in a unique venue to engage, inform and inspire learners. The presentation will highlight programs on several vessels offering learning opportunities in meteorology, oceanography, marine ecology, and the science & technology of the ship. Connecting these STEM learning opportunities to the Ocean Literacy and Next Generation Science Standards will be addressed. Opportunities for linking shipboard education with traditional classroom instruction will be identified, along with resources to support this linkage. We will close the session with an update on more than 10 years of connecting lessons about the sea, science, and each other, to promote youth resiliency and career aspirations.

Shantelle Landry, The Mariners’ Museum and Park

[310] To B-WET and Beyond: Using Multiple Points of Engagement to Foster Belonging in Students. Bay Watershed Education and Training (B-WET) grants are incredible ways to bring meaningful watershed educational experiences (MWEEs) to students of underserved communities. After three years of implementing the B-WET grant, The Mariners’ Museum and Park will share our experiences of the program model and identify ways other educators and organizations can use this from this successful program to improve other programs. Using the museum as an example of how to utilize a MWEE to create a sense of belonging in their community. There will be a hands-on, lion-fish menu game as one example of one of the many activities that are used during the multiple points of engagement.

Kat Owens, University of Hartford

[312] Entangled and Ingested: Sewing Session. In this hands-on session, you can work with Dr. Kat Owens to collaborate on a life-sized portrait of an animal harmed by plastic pollution. Each piece is made by hand-sewing film plastics on canvas. See examples here https://katowens.com/entangled-and-ingested/ We’ll co-create a large portrait while talking about the pervasive problem of plastic pollution. All materials and supplies are provided, and no skill in sewing is required.

Kristen Smith, Atlantic White Shark Conservancy; Marianne Walsh

[TER] White Shark Identification. The Atlantic White Shark Conservancy (AWSC) is a non-profit organization supporting scientific research, educating the community, and improving public safety. AWSC strives to increase knowledge of Atlantic white sharks to change public perception and conserve the species. In this session, discover ongoing white shark research projects led by the AWSC research team. Participants will begin to understand how individual white sharks are identified as part of a population study and test their skills in an identification challenge. They will also investigate the link between shark movement in the northwest Atlantic by using AWSC’s online app, The White Shark Logbook.

Concurrent Session #4: Monday, July 30—2:15 – 2:30 pm

Emily Yam, Aquarium of the Pacific; Sonia Abrahi

[BT] Climate Change, frontiers and center. Taking action on climate change can feel overwhelming, especially the scale of solutions that feel like they make a difference. Aquariums and museums have many opportunities to talk to the public about climate change. In this 50-minute session, we will share the ways that two aquariums prepare staff to talk about climate change and how we present these messages through public presentations, programs, and signage. We welcome participants to join us to talk about solutions that scale to the challenge of climate change.

Aimee Bonanno, UM-Mass Boston; Carolina Bastidas, Kate Leavitt

[BT-C] Hands-on Ocean Science Activities with NEOSSEC Member Institutions. The New England Ocean Science Education Collaborative works together to leverage assets and strengthen ocean literacy in the region with common goals of increasing belonging in ocean science education, co-learning, co-development, and co-dissemination. Join us in this mini activity fair to experience several hands-on activities that you can do in both formal and informal settings. Talk with and learn from NEOSSEC members, including MIT Sea Grant, Seacoast Science Center, UMass Boston, Bionic Bay Watershed Education and Training (B-WET) grants are incredible ways to bring meaningful watershed educational experiences (MWEEs) to students of underserved communities. After three years of implementing the B-WET grant, The Mariners’ Museum and Park will share our experiences of the program model and identify ways other educators and organizations can use this from this successful program to improve other programs. Using the museum as an example of how to utilize a MWEE to create a sense of belonging in their community. There will be a hands-on, lion-fish menu game as one example of one of the many activities that are used during the multiple points of engagement.

Karen Young, I Was A Kid

[CONF] I Was A Kid: sharing the diversity of the ocean science field, one scientist at a time. Award-winning author Karen Romano Young brings together her passions for writing, art, ocean science, and inclusion in her new project. In this session, she presents I Was A Kid, in a set of multimedia profiles of STEAM professionals from underrepresented communities who share their pathways with middle schoolers and high schoolers. A Visual storyteller, Karen uses comics, graphics, and multimedia to tell the stories, and in this session, she will also share some of the stories – all of it free as downloads and in print in this session. Find out how other educators are using this project in their classrooms, libraries, museums, and more.

Niki Sullivan, Blue Ocean Society for Marine Conservation

[EST] Lobster fishing versus Whales, the good, the bad, and the ugly. The North Atlantic right whale is a critically endangered species whose main threat is humans. Meanwhile, the lobster
Organizing and delivering presentations at NMEA 2024: Boston, MA

---

**Session Descriptions - Monday**

**[TER]** Surrounded by Water: Life on a Research Vessel in the Middle of the Atlantic. Join award-winning author and educator Michelle Cusolito, M.Ed. and a panel of experts from Woods Hole Oceanographic Institution (WHOI) for a discussion of life on board a research vessel. From moving onto the ship and unpacking equipment, to managing the personal challenges of 24-hour operations and living and working in close quarters with others, this panel shares all the details. Learn about the variety of roles on the ship from deck hand to engineer to lead scientist and find out about fascinating new equipment being used to study the deep ocean. Handout of resources provided.

**[TER]** Becoming a USA Blue School. The USA Blue Schools are a network of K-12 schools that merge the thrill of scientific discovery with a powerful classroom activity that challenges students on the Mississippi Gulf Coast. It integrates marine science, ecology, history, geography, and artistic expression to address environmental challenges in the Gulf of Mexico and encourage community action. The project involves immersive field experiences, art creation, journaling, and peer dialogue. Following field days, students collaborate with local artists on climate action projects to communicate data-driven environmental solutions. This session will discuss program objectives, evaluation findings, and how these findings can inform similar informal K12 STEAM education programs and initiatives. Additional Authors: Maya M. Walton, Assistant Director for Research and Fellowships, University of Hawai‘i Sea Grant, waltonm@hawaii.edu

**[TER]** Ocean Literacy Collaborations: pairing formal and informal educators with ocean science graduate students. We will present findings from collaborative workshops, bringing together formal and informal educators to partner with Hawai‘i Sea Grant graduate students researching local ocean science issues. The workshop aim is to provide training in education pedagogy, research methods, and communicating ocean science. The educator-researcher partnership structure is intended to build collaborations that result in increased ocean literacy—grounded in place and related to current research. We will share findings and strategies for building effective partnerships, incorporating standards in outreach, engaging multiple learning modalities in lesson plans, and sharing ocean science in both formal and informal learning environments. Additional Authors: Maya M. Walton, Assistant Director for Research and Fellowships, University of Hawai‘i Sea Grant, waltonm@hawaii.edu

**[TER]** Integration Of Ocean Literacy And Environmental Education In To The School Curriculum. Warm-up, slides describing step by step how to integrate Ocean Literacy into the curricula, present teachers' guides and students booklets, Blue Schools, and next steps.

---

**Session Descriptions - Tuesday**

---

**[TER]** New NUTME-led initiative in the University of Chile. The project involves an interdisciplinary team including marine ecologists, sociologists, and knitters. The initiative aims to raise awareness about the importance of conservation by engaging the community through art. The resulting artwork has been showcased in 8 exhibitions across Chile, serving as a source of inspiration for crochet artists and enthusiasts. The initiative is spearheaded by the NUTME, the Faculty of Mathematics, and the Vice-Chancellor's Office for Research at Universidad Católica and draws inspiration from the Coral Crochet Reef and Arrecife Hiperbólico projects. Additional Authors: Marianna Milos (Pedagogy in Visual Arts, Master of Theory and History of Art, Catholic University of Chile) / Sandra Cerda (Crochet knitting teacher) / Constanza del Campo (Master in Mathematics, Catholic University of Chile) / Carla Alonso (Journalist, Catholic University of Chile) / Katherine Cornejo (Occupational therapist, Community Center for Elder People, El Quisco Municipality) / Alejandro Pérez-Matus (PhD Marine Biology, Millennium Nucleus for Ecology and Conservation of Temperate Mesophotic Reef Ecosystems (NUTME) and Catholic University of Chile) / Sandra Cerda (Crochet knitting teacher) / Constanza del Campo (Master in Mathematics, Catholic University of Chile) / Carla Alonso (Journalist, Catholic University of Chile) / Katherine Cornejo (Occupational therapist, Community Center for Elder People, El Quisco Municipality) / Alejandro Pérez-Matus (PhD Marine Biology, Millennium Nucleus for Ecology and Conservation of Temperate Mesophotic Reef Ecosystems (NUTME) and Catholic University of Chile)

**[TER]** Tramares, Weaving Reefs. ‘Tramares, Weaving Reefs’ is the culmination of the collaborative efforts of over a hundred artists, predominantly women aged over 60, from small coastal communities in central Chile that meticulously crafted 600+ distinct pieces blending geometry, ecology, and knitting giving life to Chile’s first crocheted twilight reef. The resulting artwork has been showcased in 8 exhibitions across Chile serving as a source of inspiration for crochet artists and enthusiasts in other communities. The initiative was spearheaded by the NUTME, the Faculty of Mathematics, and the Vice-Chancellor’s Office for Research at Universidad Católica and drew inspiration from the Coral Crochet Reef and Arrecife Hiperbólico projects. Additional Authors: Marianna Milos (Pedagogy in Visual Arts, Master of Theory and History of Art, Catholic University of Chile) / Sandra Cerda (Crochet knitting teacher) / Constanza del Campo (Master in Mathematics, Catholic University of Chile) / Carla Alonso (Journalist, Catholic University of Chile) / Katherine Cornejo (Occupational therapist, Community Center for Elder People, El Quisco Municipality) / Alejandro Pérez-Matus (PhD Marine Biology, Millennium Nucleus for Ecology and Conservation of Temperate Mesophotic Reef Ecosystems (NUTME) and Catholic University of Chile)

---

**[TER]** Death becomes art. You have probably seen diaphanized creatures, transparent yet colorful specimens in glass jars, and not even realized it. Learn how a method performed by scientists since the 1970s has been transformed into a 10th grade assignment that focuses on technological skills and concepts in Biology and Chemistry, all while creating a work of art in order to address student research questions.

**[TER]** Wide Horizons: Fostering Environmental Stewardship in Coastal Mississippi Middle Schoolers through Art and Marine Science Education. Wide Horizons is an interdisciplinary place-based educational initiative funded by the National Academy of Science for middle school students on the Mississippi Gulf Coast. It integrates marine science, ecology, history, geography, and artistic expression to address environmental challenges in the Gulf of Mexico and encourage community action. The project involves immersive field experiences, art creation, journaling, and peer dialogue. Following field days, students collaborate with local artists on climate action projects to communicate data-driven environmental solutions. This session will discuss program objectives, evaluation findings, and how these findings can inform similar informal K12 STEAM education programs and initiatives. Additional Authors: Patrick Kirby, Graduate Research Assistant, University of Southern Mississippi

---

**[TER]** Becoming a USA Blue School. The USA Blue Schools are a network of K-12 schools committed to improving ocean literacy in their school community, and engaging students in action projects to protect our global ocean. Attend this session to learn more about USA Blue Schools activities, as well as how to join our network and connect with teachers across the country and beyond.
Session Descriptions – Tuesday

Concurrent Session #5: Tuesday, July 30—10:00 am – 11:00 am

Rebecca Shae, Stone Living Lab; Elisabeth Colby

[ACAD] A City is a Climate Change Laboratory. Participatory science as a means for real-world project based learning. In this session, we will explore how educators and partners are working together in Boston to create climate change Project-Based Learning opportunities for students in grades 6-12. During a summer climate institute developed by The Stone Living Lab and the National Park Service, educators are immersed in project-based learning principles and participate in climate change. Educators then utilize their experiences to create standards-based lessons for the following academic year. We will share teacher-created climate focused PBL tasks in our session, resources for educators, strategies for building sustainable partnerships.

Kara Doherty, Wade Institute for Science Education; Mary Finkelt; Sandra Ryack-Bell

[BCT] Engaging Students in Marine Animal Bioengineering: Designing Prosthetics. Give your students the chance to become apprentice engineers specializing in animal prosthetics as they create a prototype for an injured animal! Experience the Wade Institute’s Engineering Design Challenge. Animal Adaptations and Bioengineering. Engage in a dynamic curriculum designed to spark inquiry, exploration, and hands-on design challenges for students in grades 5-8. This curriculum provides the opportunity to explore animal adaptations, integrate new knowledge about prosthetics, research a specific animal, and use the Engineering Design Process to design, build, and redesign a prototype prosthetic for a marine animal. During the presentation, participants will experience firsthand one of the guide’s captivating design challenges and will be provided with a digital copy of the curriculum guide. Additional Authors: Buttonwood Park Zoo, Lloy Center for the Environment, and the National Marine Life Center.

Bob Hyldburg, Gotham Whale; Rich Riels

[CONF] Ropeless Fishing: Educating the public about whale safe fishing. Ropeless fishing is technology that removes the vertical fishing lines used in fixed gear fishing and replaces that with an acoustic or timed release that brings gear to the surface on demand. Vertical fishing lines and entanglement result in the loss and injury of 100’s whales, turtles, and marine life around the world annually. In this workshop learn about the new forms of ropeless fishing systems that are available and in development that can both improve the lives of fishermen and provide the public with ‘whale safe’ seafood.

Amy Neblett, Artist Boat

[EASt] Beach Engagement with the Public through Art and Science. Artist Boat and community partners brought Bucket Brigade and Project SIT (Seawall Interpretive Trail) to Galveston’s beaches. Bucket Brigade is a free interpretive hands on exploration that demonstrates the diversity of life of Galveston’s Coastal Ecosystem for beachgoers in an effort to improve perceptions of beaches and water quality on the Texas Coast. Project SIT transformed 70 concrete benches into educational works of art along 4.5 miles of Seawall with educational hand painted tile mosaics that highlight Galveston and the Gulf of Mexico’s ecology, biodiversity, economy, heritage and history and promote an appreciation for conservation of our oceans. Additional Authors: Sarah Frantz, Education Program Manager. Artist Boat; Kristen Keane, Lead Eco Educator. Artist Boat

Hannah Bell, UNCW, Troy Frensley

[MET] Measuring Ocean Literacy and More: Outcomes from a two day marine science education program for South African youth. Join us as we discuss an exciting multi-year evaluation project with the I AM WATER: Ocean Conservation organization in South Africa on their education program for South African youth. We will share our evaluation project with the I AM WATER: Ocean Conservation organization in South Africa on their education program for South African youth. We will share our evaluation project with I AM WATER: Ocean Conservation organization in South Africa on their education program for South African youth. Additional Authors: Strauss House, Strauss House.

Angela Dixon, Dauphin Island Sea Lab; Katie Higgins

[310] Taking Sea Level Education, Awareness and Literacy to a New Level. Bring your climate education to a new level with SEAL! NASA’s Sea Level Education, Awareness and Literacy (SEAL) Science Activation Team will explore sea level science concepts, engage in hands-on activities, and bring some of NASA’s newest data into your educational setting! Join us to learn more about our program and to find out how you can get involved. We will share activities with a focus on up-to-date lessons and a positive message of mitigation and coastal resilience.

Destiny Blow, Virginia Aquarium & Marine Science Center

[312] Science on the Go! Interactive Science Demos for All Ages. At the Virginia Aquarium, we take science on the go! Through simple, repeatable, and flexible demonstrations, educators are able to explain a variety of science topics to audiences of all ages. We will share a few of our favorite activities for attendees to take and implement in their classrooms, home institutions, or outreach curriculums. Most of these activities use easy-to-acquire materials that you may already have at home or in the classroom. Additional Authors: Dorothy Schetzel, Program Educator II, Virginia Aquarium & Marine Science Center; Sara Kiszka, Program Educator, Virginia Aquarium & Marine Science Center

Jennifer Cumbest, Grand Bay National Estuarine Research Reserve; Sandra Bilbo

[315] The Role of Evaluation in Programming. Evaluation can play a key role in program facilitation, adaptation, and field implementation. Programming at the Grand Bay NERR can be anything from a outreach booth at a small community event, a large open house themed event, education programs both in the classroom and on site, to teacher professional development workshops. In this session, we will discuss and review different types of measurement used at Grand Bay NERR and how we adapt our programming. Participants are encouraged to think of an education program they would like to evaluate and leave the session with ideas for their own program evaluations.

Kori Kaczm, Maine Sea Grant

[TER] Daylighting Careers and Training Opportunities in Maine’s Seafood Economy. Maine’s seafood economy, from harvesting, to transportation, logistics, marketing, biotechnology, food service – offers valuable employment and career opportunities. The sector has a total economic output of $1.5 billion and supports over 15,000 jobs (1% of the Maine workforce). The industry struggles with a workforce to support the industry now, and into the future. The Seafood Economic Accelerator for Maine (SEA Maine) is an industry-led collaborative bringing together leaders from across the seafood economy. Participants will learn about the strategies and assets developed by SEA Maine to attract, train and retain new talent to the industry, including K-12 engagement. Additional Authors: Anne Langston-Noll, Associate Director. Maine Aquaculture Innovation Center

Maria Madrigal, University of Southern California Sea Grant

[TER] Diversifying Marine Biology Career Paths. The Sea Grant Program at the University of Southern California (USC) is part of the National Oceanic and Atmospheric Administration’s National Sea Grant College Program integrating research, education, and outreach with a specific focus on the Urban Ocean. USC Sea Grant will share their experience leading a unique regional partnership offering an entry point into a marine biology career path. A local conservation corps, an aquarium, and an after-school program provider leveraged their strengths and resources resulting in a multi-faceted educational program. We will share the project timeline and progress to its evolving iterations. Learn about our challenges and successes. Additional Authors: Laura Rinke (Associate Aquarion Director, Heal the Bay) Deana Porras (Senior Program Manager, Los Angeles Conservation Corps). Jennifer Kolbauer (Director, USC K-12 STEM Center) Linda Chilton (Education Manager, USC Sea Grant)

Molly Dushay, Trumbull High School; Meghan Reilly

[BCT] Diving Deep: Navigating Sustainability through the Four Zones of the Open Ocean. Climate change is causing unprecedented change to the open ocean. Students will identify the different zones of the ocean, understand how the open ocean cycles better, knowledge can help set effective fishing regulations and gain a deeper understanding of the changes taking place. Give your students the opportunity to explore animal adaptations, integrate new knowledge about marine debris, and study marine debris. This hands-on session will engage participants in the components of student-led action planning, including a waste audit and implementation plan. Participants will understand the impacts of ocean debris on the environment and ecosystem services – offers valuable employment and career opportunities. The sector has a total economic output of $1.5 billion and supports over 15,000 jobs (1% of the Maine workforce). The industry struggles with a workforce to support the industry now, and into the future. The Seafood Economic Accelerator for Maine (SEA Maine) is an industry-led collaborative bringing together leaders from across the seafood economy. Participants will learn about the strategies and assets developed by SEA Maine to attract, train and retain new talent to the industry, including K-12 engagement. Additional Authors: Anne Langston-Noll, Associate Director. Maine Aquaculture Innovation Center

Juliet Fluty, University of New England/ Educational Passages; Cassie Stymiest

[CONF] Blue Horizons Global Initiative. In my session, I will present my documentary on my senior project. I will highlight our enriching trip to Ireland and my impactful teachings in Biddeford, Maine. The documentary will showcase our adventures, insightful interviews with students and teachers, and much more. The main focus is cross-cultural teaching of STEM education in Ireland and Maine through the Mini-Maine Boat Project.

Rochelle Strauss, Straus House; Lauren Rader

[EASt] Navigating the Sea: Harnessing illustrated Non-fiction Children’s Books to Build Ocean Literacy. Award-winning author Rochelle Strauss and science teacher Lauren Rader team up to share their innovative approach to teaching about ocean and climate science, using illustrated non-fiction children’s books. As powerful learning tools, these books create effective and meaningful educational experiences that build ocean and climate literacy, and inspire young people to take action. Showcasing a selection of non-fiction illustrated books, this session will provide practical tips for educators on modifying and supplementing existing resources to create a comprehensive ocean literacy curriculum.

Allison Spasky, Lake Champlain Sea Grant; Ashley Eaton

[MET] What is watershed education? Defining the objectives and competencies of watershed education initiatives. A watershed is defined as the area of land that drains into a common water body. Everyone lives in a watershed and has a stake in protecting it. Many students learn about watershed education in Ireland and Maine through the Mini-Maine Boat Project.
water in a place-based context, but few researchers have explored how and why watershed education is taught, and what makes watershed education unique. This lightning talk will provide a brief overview of what we already know about watershed education and ask attendees to participate in an ongoing research project that aims to define the objectives and competencies of watershed education by gathering expert opinion through an open survey.

Jamie Steichen, Texas A&M University

[MET] First year experience course: increasing student engagement with hands on learning and high impact practices both in and out of the classroom at the university level. In my classroom, I work to develop a learning environment where students are engaged in the learning process and can connect that learning to their own personal experiences. In this paper, I will describe the visualization tool that was used in the classroom to engage student learning and provide an open-source tool that others can use to engage their students as well.

Elizabeth Stratton, University of North Carolina at Wilmington, North Carolina State University

[MET] Learning across waters: Developing a comparative evaluation for the Oceans for All Alliance. Please join us as we share our work on a comparative evaluation of a new alliance of immersive ocean-focused programs for youth in the Galapagos Islands, Ecuador, and South Africa. We are developing a single, crosscutting survey instrument to measure diverse and aspirational student outcomes across this alliance. This approach allows for comparisons across the participating organizations to enhance organizational learning through evaluation and to build a coordinated effort of programs across multiple geographic regions.

DeMeester, Public Service Associate, Carl Vinson Institute of Government/Bilijana Birac, Graduate Associate Director or Marine Education, Marine Extension & Georgia Sea Grant/Karen & Volunteer Coordinator, Georgia Sea Grant/Tyler Kinner, Research Scientist II, Georgia Tech/Benjamin Hamlington, NASA JPL

Developing Sea-Level Rise Content with NASA for Educators in California and the U.S. The Water Institute

Delanie Medina, California Sea Grant

[310] Developing Sea-Level Rise Content with NASA for Educators in California and the U.S. The Sea Level Education, Awareness and Literacy (SEAL) project is a national NASA and NOAA Sea Grant partnership effort to expand and improve sea-level rise (SLR) educational content and activities. The presentation will describe how team members, California Sea Grant and the Climate Science Alliance, are developing Climate Kids Traveling Trunks to provide hands-on science, storytelling and art resources to help teach SLR topics. It will also highlight ways the consortium’s multi-year travel grant funding will be used to engage educators across the state.

Jolie Griffee, PLACE with Mississippi State University Extension

Concurrent Session #7: Tuesday, July 30 — 2:30 – 3:30 pm

Brian Slopes, Vtvlc

[ACAD] Marine Biology : An Innovative Hybrid Model. Marine Biology combines online and hands-on learning (VTvLC), and is designed to inspire young adults to understand and care about the ocean, regardless of what occupation they pursue. One of the main goals of Brian Slopes’s teaching has been to motivate students with authentic activities that are real contributions to the community and nature and that involve students with organizations outside the school. Students have collaborated with Friends of the Winnipesaukee, the UVM Watershed Alliance, the Montpelier Conservation Board, CCM (Central Caribbean Marine Institute), BIOS (Bermuda Institute of Ocean Science), and The Reef Environmental Educational Foundation to name a few. Students are motivated to learn more and at a deeper level when they know their work is real and is available for the public.

Katie Lodes, St. Joseph Academy, St. Louise, MO; Nancy FitzGerald; Miriam Sutton

[BCT] EARTH (Education and Research: Testing Hypotheses). Engaging students using climate and ocean data science. EARTH affiliated teachers will lead participants through lessons that use ocean data to engage students in interactive and engaging ways. The activities will include using a digital breakout to understand the climate and ecosystem of Antarctica. Using the card game ‘War’ to show how changes in ocean chemistry affect life in the ocean. And using art and data visualization to engage students in climate data. Participants will take away three ready-to-use lessons and will be given an overview of the Monterey Bay Research Institute’s MBARI EARTH website to find additional lessons that can be adapted for a K-12 classroom.

Cheryl Milikien, Falmouth High School

[310] Sea Level Rise and Storm Surge in Falmouth. Students in Falmouth High School’s Marine Ecology class developed a proposal to the town to install visuals to help the public understand sea level rise (SLR) and its implications in Falmouth, Falmouth can expect to see an increase in frequency and intensity of storms and localized flooding is already a problem. Education and awareness are key to resilience. Students came up with a number of visual representations to install in a few highly visible sites around town.

Krsten Keane, Artst Boat

[312] Island STYLE: Systemic Training for Youth Leadership in the Environment: a collaborative effort between NOAA BETW, Artist Boat, the local school district, and natural resource organizations. The youth of Gulf of Mexico islands are uniquely poised to be the future leaders in their communities and through a dynamic and logical project, Island STYLE was designed. Project Island STYLE was designed for the 7th grade campus on NOAA BETW MVEE’s through teacher led curricula that would result in student led decision making. Through permanently embedded inquiry lessons, students determined a boat design. Additionally, the project was designed to investigate and develop a field adventure and environmental action project. Island STYLE curriculum included teacher professional development, core subject lessons based on NOAA priorities and trust resources, and Artist Boat led workshops and kayaking adventures.

Kristen Ballantine, NOAA Office of Education

[315] Traveling through time with the International Ocean Discovery Program. Scientific research is a dynamic and complex pursuit. The IODP is a research vessel that drills into the ocean floor to collect samples on behalf of the International Ocean Drilling Program. Data collected during IODP expeditions are used to better understand climate change, geology. Earth’s history, natural hazards, and the evolution of life. In this workshop, participants will learn how to incorporate free JR resources into their curricula to make science real for their students.

Maggie Allen, NOAA

[TER] Tapping into heat and health resources with NOAA. Do you know that NOAA works in human health? Because human health is intricately linked to the health of other animals and the environment, all of which are influenced by the weather and climate. NOAA is a great fit to house a One Health Program. This initiative has relevant focus areas including benefits from the sea: “aquaculture”, and “aquatic organism health”. NOAA also hosts Heat.gov, a source of heat and health information that contains useful activities and tools for various audiences and settings. Come to this lightning talk to learn about the beginning stages of development for the Oceans for All Alliance! Additional Authors: Juli Triton (Climate and Health Program Director and One Health Lead at NOAA) and Alice Lau (One Health Coordinator for NOAA). Hunter Jones (Deputy Climate and Health Program Manager for NOAA). Morgan Zabow (Community Health and Information Coordinator for NOAA). and Lauren Balaton (NIHHS Communications Coordinator for NOAA).

Paul Dobbins, World Wildlife Fund US

[TER] Advancing Seaweed and Shellfish Farming for Climate and Societal Gains. Using through Earth’s products, (e.g. exam more about NOAA’s resources on heat and health) Additional Authors: Maya Pelletier

Keri Kaczor, Maine Sea Grant

[TER] Seaweed in the Classroom: A Program to Grow Ocean Literacy in K-12 Audiences in Maine. Seaweed in the Classroom is a program that helps educators to develop hands-on activities that teach students about the intertidal zone and its importance to our state. Students learn about the different types of seaweed, their importance to the ecosystem, and how they can be used as a food source. Additional Authors: Jonathan Gordon, Amanda Vincent, and Jenifer Connors.
session will provide tips on creating accessible, engaging and effective visuals for science communication, and education from the perspective of a graphic designer for NOAA Education. From colors to fonts to layouts, together we’ll explore design best practices – and have some fun with worst practices along the way!

Cait Goodwin, Oregon Sea Grant

[EAST] Tsunami Quests Lead to High Ground. Knowing what to do in an emergency can be critical to safety. Developed by Oregon Sea Grant’s Oregon Coast Quests program, “Tsunami Quests” are fun and active outdoor hunts that help people of all ages learn about earthquake and tsunami preparedness on the Oregon Coast. Using maps and engaging directions, participants collect clues from the environment as they discover when and how to evacuate to high ground. Join this session to see how Tsunami Quests build community resilience and promote a culture of preparedness among residents and visitors.

Emily Wanous, Algalita Marine Research and Education

[EAST] Supporting Educators as Allies in Environmental Movements. Introducing Wayfinder Society for Environmental Education: an innovative, free online program empowering educators with current environmental education resources on plastic pollution, climate change, and related issues. Resources include reusable classroom toolkits, downloadable lesson plans, educator mini-grants, and more. This lightning session is brought to you by Algalita, the organization that started the movement to end plastic pollution nearly 30 years ago when they were the first organization to bring attention to the swirling soup of plastic in the Pacific – commonly known as the Great Pacific Garbage Patch. Since then, Algalita has revolutionized the plastic pollution conversation by building a web of connections between researchers, activists, educators, and young people across the globe. Come explore the world of environmental education with us!

Marianne Walsh, Atlantic White Shark Conservancy; Kristen Smith

[MET] Coexisting with Sharks: How research and education initiatives are working to change public perception. Join the AWSC Education Team and learn how you can bring shark education to your students and community. This workshop will introduce you to standards-based curriculum that connects learners to the natural history of white sharks in new england and empowers them to investigate how humans and wildlife can coexist. Workshop participants will receive free resources to use this curriculum on their own and will have an opportunity to get wet while participating in an interactive exercise that teaches about research technology used in tracking sharks. This workshop will be wicked awesome!

Kasey Gaylord-Oplevaski, EarthEcho International; Sean Russell

[310] An Ocean of Opportunity: Engaging Students in the Blue Economy. Connect youth to the sustainable blue economy with EarthEcho International! Join us to explore EarthEcho Academy resources, including An Ocean of Opportunity interactive module and companion activities that examine renewable energy, explore plastic alternatives, and inspire wise energy capture through biomimicry. Learn how your students can participate in EarthEcho’s Ambassador programs, an immersive learning experience that empowers them to develop their own community-based projects focused on the blue economy, regenerative ocean aquaculture, and plastic pollution. Come away with access to FREE E-STEM resources and introduce your students to a growing community of young ocean advocates through EarthEcho’s GenSea community platform.

Jennifer Kennedy, Blue Ocean Society for Marine Conservation; Cynde McNinis

[312] Inflatable Whales Present a Unique Learning Opportunity. Inflatable whales provide a unique opportunity to teach people about marine mammals. There’s nothing like a 60-foot, life-size whale to get the attention of the size of these magnificent animals. Programs can be tailored to teach students about habitat, behavior, and human impacts, depending on the age of the students and the geographic area. They can also inspire enrichment activities like reducing plastic use and inspiring students to explore STEM careers. Learn about the life-sized whale you can bring to your classroom and activities that anyone can do to help students learn about whales. Additional Authors: Nicole Sullivan, niki@blueoceansociety.org

Allison Rosner, NOAA Fisheries

[315] NOAA’s Bay Watershed Education and Training (B-WET) Program. New England. This session will introduce how the B-WET program funds projects engaging teachers and students across New England in Meaningful Watershed Educational Experiences (MWEEs) leading to longer-term integration of outdoor experiential learning in sustained curricular experiences. This session will highlight resources for using the MWEE framework in informal and formal education settings: and showcase current New England B-WET grant recipient successes working directly with schools, teachers, students, and other community partners. Additional Authors: Bronwen Rice (NOAA Office of Education); Jaime Frungillo (NOAA Office of Education); Tim Zimmerman (NOAA Office of Education)
time, gives a ‘snapshot’ of whale sightings across the islands, providing insight into population trends and supplementing data collected from other Sanctuary research.

Alicia Williams, University of New England; Charles Tilburg

[MET] From River to Ocean: Exploring Nutrient Impacts on Phytoplankton in the Saco Estuary, ME. A Course Based Undergraduate Research Experience (CURE). CURE pedagogies enrich student experiences through active learning with authentic scientific research. This multi-lab CURE focuses on understanding nutrient/phytoplankton dynamics in estuaries. Across successive labs students collect water samples along an estuarine gradient and establish nutrient enrichment bioassays. Standard curves and in situ nutrient concentrations are determined by color chemistry. Chlorophyll a concentrations are measured before and after nutrient enrichment. Students generate scientific figures and apply statistics to collected data culminating in a writing assignment styled like a scientific research article. These methods deepen comprehension of complex concepts and foster practical skills that prepare students for futures in Ocean Science.

Li-Ying (Laura) Lin, Ocean Affairs Council

[310] Integrate National Resources to Build a Ocean Literacy Benchmark Nation (OLBN) by OAC, Ocean Literacy Benchmark Nation (OLBN) proposed by the Ocean Affairs Council, focuses on two main objectives. ‘Constructing a Benchmark Nation for Ocean Literacy’ and ‘Promoting the Upgrade of Talent in the Marine Industry.’ Under these two main objectives, information technology is integrated to establish two major systems: the Ocean Literacy Digital Academy (Project 1-1) and the Marine Talent Digital Academy (Project 2-1). These systems facilitate the integration of information on ocean literacy and the marine industry. Additionally, the project involves creating ocean literacy and marine industry talent learning passports through information systems. The development of the Ocean Literacy Competency Model (Project 1-2) and the research and development of common and core competencies in the marine industry (Project 2-2) contribute to the establishment of a foundational framework for talent training that aligns with international standards. Furthermore, the project includes marine talent supply and demand surveys (Project 2-4) and an annual marine talent supply and demand report (Project 2-5) to establish a comprehensive database. Through the Ocean Literacy Academic Conference (Project 1-6), research talent is nurtured, optimizing and expanding the project’s capacity continuously. Collaborative efforts with Lawrence Hall of Science, UC Berkeley, US in developing OSS 9-12 lesson plans (Project 1-7) add to establish gaps in ocean literacy lesson plans. The research output is used to promote foundational competency training for leadership talent (Project 1-3), facilitate international connections for leadership talent (Project 1-4), and enhance the social influence of leadership talent (Project 1-5). Ultimately, the project aims to establish an industry talent training system and enhance industry competitiveness through partnership relations (Project 2-3). The project is scheduled to commence its four-year mid-to-long-term development plan from January 2025 to December 2028. In addition to proposing the mechanism for a model nation in ocean literacy, the project also aims to collaboratively promote Asian ocean literacy through joint efforts with AMEA (Asian Marine Educators Association) and contribute to achieving the United Nations Sustainable Development Goals. Additional Authors: Dr. Brian Snyder, LSU, Professor in Environmental Sciences, Louisiana State University; Sibel Bargu, Professor of Sustainable Development Goals. Additional Authors: Ray (Chia-Dai) Yen, Director of Planning and Development, Ocean Affairs Council; Pamela Francis; Dani Dilullo

Dani Dilullo, Louisiana Sea Grant; Vanessa van Heerden

[312] EnvironMentors: Ten Years of Lessons Learned from a High School Science Mentoring Program with EnvironMentors (EM) is an award-winning after-school science mentoring initiative that pairs underrepresented students from area high schools with LSU graduates and undergraduates. For over ten years, Scotlandville High School, LSU College of the Coast & Environment, and Louisiana Sea Grant have partnered to launch this initiative that bridges local schools and the college campus. Hear perspectives from the multiple partners involved in this project: a high school biology teacher, a graduate student coordinator, and the university partner. Each will share how the monetary series of valuable lessons they have learned and how they are continuing to adapt the program to changing students’ needs. Additional Authors: Dr. Brian Snyder, LSU, Department of Environmental Science. Hannah Beck, LSU, Department of Oceanography and Coastal Sciences.

Vanessa van Heerden, Louisiana Sea Grant; Pamela Francis; Dani Dilullo

[312] Mapping Out Our World Through the GeoStewards Program. High school students from underrepresented communities gained new insight into data visualization and science communication through an after-school STEM leadership initiative. Participants conducted independent research projects using ArcGIS Pro and StoryMaps, modeled after applied geospatial research aids in understanding environmental issues and left the program career ready with a GIS certificate. Learn from project partners about the lessons learned and insights gained from the pilot year of this program, ideas for the future, and how students in the program are becoming informed environmental stewards for their communities. Also, come see some of the work they have created! Additional Authors: Naya Black, Louisiana Sea Grant, Brian Snyder, Associate Professor in Environmental Sciences, Louisiana State University. Sibel Bargu, Professor of Oceanography and Coastal Sciences, Louisiana State University.

Kristen Smith, Atlantic White Shark Conservancy

[315] The Gills Club: Creating the next generation of shark and ocean stewards through a diverse array of educational opportunities. The Gills Club is Atlantic White Shark Conservancy’s STEM-based education initiative dedicated to connecting girls with female scientists from around the world, sharing knowledge, and inspiring the next generation of shark and ocean advocates. A strong piece of this program is the direct access to leading female researchers who are a part of the Gills Club Science Team. During this presentation, we will share how you can bring shark researchers and conservation research projects to your audience through our podcast, Gills Talk. As more programs have students looking to engage with a career professional, this is a great way to provide access to your students. Additional Authors: Marianne Walsh, Atlantic White Shark Conservancy. Cynthia Wigren, Atlantic White Shark Conservancy. Dr. Heather Marshall, Julie Patterson

Cynthia Wigren, Atlantic White Shark Conservancy

[315] Coastal Engineering Education: People, Place and Practice. Erosion and sediment transport are natural processes that engineers strive to modify to achieve particular objectives. This session will share resources (e.g., lesson plans and a small-scale wave tank model activity) created as part of a BIVET grant for middle school students. Coastal Issue Quest storymaps will also be highlighted. Participants: please bring the following for use in hands-on activities: 1) a 2-4 oz sediment sample from your local waterway, and 2) a news article describing either: a) a coastal infrastructure project designed to mitigate erosion or sediment transport or b) the impact of coastal erosion on people, property (place) or practices. Additional Authors: Anne Moser, Senior Special Librarian and Education Coordinator, Wisconsin Sea Grant. Adam Beechle, Coastal Engineering Outreach Specialist, Wisconsin Sea Grant.

Chris Flight, Maryland Sea Grant; Amy Lang

[TER] Aquaculture is Agriculture. The Aquaculture is Agriculture program teaches 7th grade students about innovative agricultural practices and related college/career opportunities. This session will outline the interactive activities used to teach over 500 youth about this topic. Genetics pumpnett square race. Tragedy of the commons - Ag v Wild. Aquaculture selfe station - roleplay scenario allowing youth to handle tools, and discover how they are used. To build upon youth interest generated during Ag Awareness Days, youth are invited to join a 4-H aquaculture club to learn the basics of fish husbandry and explore college/career related opportunities in greater detail. Additional Authors: Catherine Frederick, Extension Associate, University of Maryland Extension.

Chris Flight, Maryland Sea Grant; Amy Lang
Nora Skinner, Mississippi State University Conservation and Restoration Lab.

[CONF] Fostering STEM Career Skills Through “Plan-It Marsh & CRITS”. Advancing STEM career skills and coastal resilience through the Mississippi State University Coastal Research and Extension Center’s “Plan-It Marsh” and “CRITS” programs. This talk provides an overview of the hands-on programs for middle and high school aged students. Participating students learn skills such as growing marsh and dune grasses for restoration projects, UAS operation, boat operation, and navigation and mapping. Flyers will be brought to hand out to interested educators with information about the programs and links to the complementary curriculum that is associated with both programs. Additional Authors: Stacy Hines - Assistant Professor and Extension Range Specialist, Texas A&M AgriLife Extension, Allie Keith - Extension Professor Associated with the Coastal Bend, Mississippi State University, Anthony Vedral - Extension Associate, Mississippi State University. Eric Sparks - Asst Extension Prof & Director, Mississippi State University. Mississippi-Alabama Sea Grant Consortium

Austin Pugh, NERACOOS

[CONF] The Northeastern Regional Association of Coastal Ocean Observing Systems: meeting stakeholders, informing policy, and educational needs. As part of our mission to meet societal and end user needs, NERACOOS produces, integrates, and communicates information about our region’s coasts and oceans. We regularly engage with stakeholders to transform data collected by our observation network into products, including the mariners dashboard which provides information on marine conditions like wave height and wind speed. The NERACOOS educational educational is exemplified by an ongoing project, the Northeast Coastal Acidification Network’s Education and Outreach workshop in which is tasked with developing educational products. By working with educators, NERACOOS can bring local ocean observing into the classroom and better meet our mission. Additional Authors: Jake Kritzler, Jackie Motyka, Tom Shyka, Rob Cardeiro, Emily Silva, Katy Bland, Cameron Thompson, Anna Simpson

Sonia Ahrabi, New York Aquarium; Emily Yarn

[TER] Nature-Based Programs at Aquariums. Families in historically-excluded communities do not always have access to healthy green spaces and benefit from nature and play-based experiences in cultural organizations. Aquarium of the Pacific and New York Aquarium will discuss programs that engage families in their local urban audience. Aquarium-based guided exploration is a helpful tool to demonstrate to families how to safely explore and utilize these spaces. The presenters will discuss how to build relationships with community leaders to help families navigate the policies and procedures that advocate. This session will include opportunities for others to share their own successes and challenges with nature-based programs.

Nancy FitzGerald, Rutgers University; Kay Bidile; Kim Thamatrakoln; Kathy Couchon

[MET] Strengthening Ocean Education in Latin America: RELATO’s Experience. The Latin American Marine Educators Network (RELATO) emerges to promote ocean literacy and marine conservation specially targeted to children. Through the Marine Plankton Ocean Wanderers’ project, RELATO designed and facilitated an interactive workshop for teachers from 8 Latin American countries, impacting 1171 participants across 33 institutions. This experience underscores the importance of meaningful didactic activities and teacher support, revealing student learning. Are you ready to be part of this workshop and share with us your learnings? Additional Authors: Celeste Kroeger Campodónico, Master in Marine Biodiversity and Conservation, Millennium Nexus for Ecology and Conservation of Temperate Mesophotic Reef Ecosystems. RELATO’s Co-founder celekroeg@gmail.com

Madison Willert, NOAA Sea Grant; Diana Burich; Maurice Crawford; Vanessa van Heerden; Keri Kacor; Cait Goodwin; Ben Bray

[CONF] Sea Grant’s Role in Developing Marine Debris Literacy (Back to Back Session) This session showcases current Sea Grant-funded efforts via the Bipartisan Infrastructure Law and the Inflation Reduction Act to advance marine debris literacy. Included projects span the nation and will cover curriculum development, public outreach campaigns, community stewardship, and other relevant topics.

Sandra Bilbo, Grand Bay NERR

[CONF] Learning How to Block Print: A Mini Art Workshop. (Back to Back Session) Block printing is a fun way to recreate and share artwork. Inspired by the Walter Anderson Museum of Art, Grand Bay NERR educators have incorporated block printing into education programs. In this mini-workshop, participants will learn how to carve their own blocks and print pieces to share. There will be discussions among participants on how to bring their own blocks and print pieces to share into your programs. Everyone should have a marine-themed image in mind that could fit on a 2x3 block. The simpler your design, the better! Due to limited supplies, we may have to share materials.

Yolanda Sánchez, Independent; Celeste Kroeger Campodónico

[MET] Strengthening Ocean Education in Latin America: RELATO’s Experience. The Latin American Marine Educators Network (RELATO) emerges to promote ocean literacy and marine conservation specially targeted to children. Through the Marine Plankton Ocean Wanderers’ project, RELATO designed and facilitated an interactive workshop for teachers from 8 Latin American countries, impacting 1171 participants across 33 institutions. This experience underscores the importance of meaningful didactic activities and teacher support, revealing student learning. Are you ready to be part of this workshop and share with us your learnings? Additional Authors: Celeste Kroeger Campodónico, Master in Marine Biodiversity and Conservation, Millennium Nexus for Ecology and Conservation of Temperate Mesophotic Reef Ecosystems. RELATO’s Co-founder celekroeg@gmail.com

Sandra Bilbo, Grand Bay NERR

[CONF] Block printing is a fun way to recreate and share artwork. Inspired by the Walter Anderson Museum of Art, Grand Bay NERR educators have incorporated block printing into education programs. In this mini-workshop, participants will learn how to carve their own blocks and print pieces to share. There will be discussions among participants on how to bring their own blocks and print pieces to share into your programs. Everyone should have a marine-themed image in mind that could fit on a 2x3 block. The simpler your design, the better! Due to limited supplies, we may have to share materials.

Aimee Bonanno, UMass Boston; Diana Payne; Grace Simpkins

[MET] Working Collaboratively Toward Equity, Access, and Belonging in Ocean Science. The New England Ocean Science Education Collaborative works together to leverage assets and strengthen ocean literacy in the region with common goals of co-learning, co-development, and co-dissemination. In 2022, we added a goal to make ocean science education more equitable. Working collaboratively is a key to inclusive and accessible in New England. Diversity, equity, and access, and critical consciousness framework to change systems and make ocean science education more inclusive. Please join us as we illustrate what makes NSEC/ESC resilient, share our journey with diversity, equity, and belonging, and provide examples from museum members and how they take critical action.
Session Descriptions - Wednesday

Savanna Finley, Parrish Community High School;

[310] Bringing the Estuary Into Your Classroom: A Guide on Extending Estuary Learning Through Classroom Aquariums. This presentation focuses on creating connections to estuary animals through collection aquariums. While charismatic animals like manatees get all the fame, local juvenile fish are left unnoticed and potentially unprotected. Using data from a classroom study on place based education to get students interested in estuary animals, this framework gives teachers a methodology for extending estuary learning beyond the field and into the classroom. This framework focuses on giving teachers the tools for how to collect local estuary marine animals, how to measure student engagement with the animals, and how to encourage student participation and interest outside the classroom.

Monika Pels, Ocean Networks Canada; Dwight Owens

[312] Data from the deep. Ocean Science Integration for all. Snag ready-to-use resources and experience the awe of deep sea creatures and ocean data. Explore and examine how Ocean Networks Canada’s (ONC) underwater observatories can be used to introduce oceanographic concepts in many subject areas. Participants will explore Oceans 3.0, the free online data portal available for all to dive into the ocean, whether they have access to a coastline or not! A natural fit as we approach the halfway mark in the UN Decade of Ocean Science for Sustainable Development (2021-2030), this session will help you integrate Ocean data in new and creative ways.

Laura Moore, East Lyme Public Schools

[TER] Marine Investigators: Implementing inquiry-based, experiential learning with elementary learners to foster creative exploration and awareness about marine and coastal environments. Engage in examples, learning tasks and lessons that will immerse the youngest students in meaningful learning opportunities about marine topics to be used in the classroom or during field experiences. This session will cover best practices to incorporate marine education into 1st-2nd grade curriculum and assess the value of learning the entire design process of a marine investigator. Indigenous connections with oceans, marine life, stewardship ideas, and more. Participants will leave the session with sample lesson plans, suggested book lists, hands-on project ideas, field experience plans as well as recording sheets for inquiry-based tasks.

Concurrent Session #11: Wednesday, July 31—2:30 – 3:30 pm

Tina Miller-Way, Dauphin Island Sea Lab; Dani Dilullo

[ACAD] Development of Gulf of Mexico Literacy Principles. The Ocean Literacy (OL) campaign was developed to highlight the importance of the ocean in people’s lives. During the Ocean Decade, this endeavor continues to remain relevant. The OL model’s success has led to the development of topoi (e.g. climate energy) and regional literacies (e.g. Great Lakes, Mediterranean). These frameworks have allowed groups to build capacity around emerging issues, assess gaps, and collaborate more effectively on environmental literacy projects. We are developing regional literacy principles to support educators and researchers in applying OL to regional marine and coastal contexts. We’ll share our thoughts on this effort and help co-produce the nascent GoM Literacy Principles.

Madeleine Sherman, Hawaii Institute of Marine Biology

[ACAD] Increasing confidence in Marine Science and invoking stewardship through place-based programs in Hawaii. To encourage students to pursue science careers, we developed and launched two programs. The Marine Molecular Mentorship Program (M3MP) and Tree to Sea Camp. M3MP provides opportunities for underrepresented and marginalized high school girls with removing barriers. This program fills a niche for molecular biology-focused activities, and creates long-lasting relationships with mentors and peers within each cohort. Tree to Sea Camp partners with nonprofits and leverages existing infrastructure to engage 30-40 middle school students, who are inspired to become stewards through cultural and environmental activities throughout the week. Both programs have positive evaluations and are becoming institutionalized programs. Additional Authors: Avery Beck, Grand Bay National Estuarine Research Reserve Coordinator, Málama Maunulua 2 Eva Majeroa, Coral Molecular Biologist. Coral Resilience Lab - Hawaii Institute of Marine Biology 3 Kira Hughes. Managing Director. Coral Resilience Lab - Hawaii Institute of Marine Biology

Maya Pincus, International Ocean Discovery Program

[ACAD] You mean to tell me.. Social media can improve [science] literacy? Many educators struggle to hold their students’ attention, because they have to compete with social media platforms that are designed to transfuse users and keep them scrolling. Instead of trying to win this uphill battle, educators can leverage these websites to get students excited about science. In this session, participants will be introduced to classroom strategies and activities that increase literacy and engagement in science through the social media accounts of science organizations such as the ocean-drilling research vessel JOIDES Resolution.

Avery Beck, Grand Bay National Estuarine Research Reserve

[BCT] Designing an Inclusive Program for a Vision Impaired Audience. Join us to hear more about the Grand Bay National Estuarine Research Reserve (NERR) efforts in designing programs for a visually impaired audience. Learn different tips as we walk through the entire design process of creating this program and be inspired to adapt programs at your facility for visually impaired audiences.

Alexandria Gillen, National Oceanic and Atmospheric Administration

[CONF] Let’s Talk Trash! Marine Debris Educational Resources from the NOAA Marine Debris Program. Marine debris is a growing, global issue that can be difficult to bring to life for students in the classroom. Join us to learn through field experiences and develop effective strategies for educators to help students feel empowered to make a difference. The NOAA Marine Debris Program has a variety of hands-on lesson plans, activities, and opportunities for students of all ages to learn about marine debris and how they can be a part of the solution - all available online for free! We will share new and updated resources for engaging youth in marine debris education and action, including standards-aligned, hands-on, and place-based flexible materials.

Laura Biales, Málama Maunulua

[CONF] Instilling Place-based Environmental Literacy and Stewardship Through Experiential Learning in Hawaii. Málama Maunulua’s restoration work has inspired the development of hands-on, place-based experiential learning camps. The 2-part classroom curriculum educates students about watersheds and coral reefs through a cultural, ecological, and socioeconomic lens, while facilitating their understanding of anthropogenic impacts on these systems. These programs are designed for students from Dillingham High School and theʻAina Camp. Students learn about traditional and modern resource management while developing stewardship skills and deepening their understanding of science and Hawaiian culture. Both programs aim to foster environmental literacy and inspire action among students who will be the stewards of our oceans. Additional Authors: Madeleine Sherman, Project Manager. Coral Resilience Lab - Hawaii Institute of Marine Biology

Marisa Immdardino, Lake Champlain Sea Grant Watershed Alliance

[CONF] From Creek to Career: Exploring impacts of watershed education internship opportunities. What leads professionals into water related fields? This lightning talk will discuss research that examines the impacts of semester-long, watershed education internship opportunities for undergraduate students. Highlight career trends that emerged in participants’ post-internship and investigate the extent that these experiences facilitated career pathway transformation. Data utilized in this work was collected through surveys and interviews with alumni from three different watershed education internship programs at Bow Seat Ocean Awareness Programs in New York, and Pennsylvania. Results from this research will fill data gaps in understanding long-term impacts of participation and help improve future recruitment and retention of interns in similar programs.

Susan Tang, Bow Seat Ocean Awareness Programs

[EASt] Creative Currents: Empowering Students to Create Art for a Sustainable Future. The creative arts have long been a powerful vehicle for challenging injustice and bringing about change. The Bow Seat Ocean Awareness Programs (BOWE) Program, community college students and community college students and the Ocean Awareness Contest. As we approach the 2023 Ocean Awareness Contest, we will discuss how the creative arts can be part of the solution - all available online for free! We will share new and updated resources for engaging youth in marine debris education and action, including standards-aligned, hands-on, and place-based flexible materials.

Margrethe Serres, Woods Hole Oceanographic Institution; Julie Huber

[MET] Marine Science Research Opportunities for Community College Students at WHOI. Community colleges are an underrepresented source of diverse and talented students. We have created two non-residential research experiences for regional community college students with the goal of increase and sustain the inclusion of these students into the marine science education and research community. By participating in authentic research experiences, the students gain a unique understanding of professional practices that complement their classroom learning. The students are also exposed to STEM careers and educational paths. We offer a spring semester program and a 9-week summer program. Our evaluations indicate both experiences impact STEM identity and provide opportunities for undergraduate students. Additional Authors: Kama Thieler, kthieler@whoi.edu, Undergraduate Programs Coordinator. Academic Program Office. Woods Hole Oceanographic Institution. Bridget E. Burger, beb12@whoi.edu, PhD student. University of New England. Mary J. Carney, mcarney@whoi.edu. USDA Forest Service. Woods Hole Oceanographic Institution. Margaret K Tivey, mtivey@whoi.edu, Senior Scientist. Marine Chemistry and Geochemistry Department. Woods Hole Oceanographic Institution

Bethany Smith, The Virginia Institute of Marine Science; Sarah Nuss

[MET] Pathways to Ocean Science Careers: Which significant life experiences play a key role?. This study examines the life experiences leading to a range of ocean science careers, to uncover factors that influence the pathways that people choose to pursue. Using the Blue Economy Career Exploration Fair, we captured data on participants’ career pathways and experiences. Life experiences (or combination of experiences) may lead to understand which produces the greatest success, and this information could be beneficial across multiple perspectives. Ultimately, researchers could share these group profiles with interested groups to make data based decisions, and mentorship opportunities to see which activities are successful, and who to prioritize education and outreach activities that are shown to most significantly lead to successful ocean science careers. We plan to share results from our pilot study, as well as the call for additional survey responses nationwide. Additional Authors: Dr. Sarah Nuss. Education Coordinator. Chesapeake Bay National Estuarine Research Reserve in Virginia.

Holly Moran, University of Rhode Island. Graduate School of Oceanography

[MET] Speed Dating with the Blue Economy: Making a Match with Potential Career Opportunities. In the ocean sciences and other STEM fields, experiential, hands-on learning opportunities often occur during the summer, and, for some students, especially those from low-income and/or unrepresented populations, who need to work, have family obligations, cannot travel, or have other limitations, access to such opportunities may be challenging. NOAA’s Ocean Exploration Cooperative Institute, hosted at the University of Rhode Island, aims to reduce this access gap, as well as the mismatch between recent graduates and the Blue Economy (BE). The Institute’s Blue Economy Career Exploration (B2E) Program community college students and the regional community college students are engaged in an academic-year, part-time paid experiential learning opportunity to gain foundational experience in ocean science and technology while also acquiring flexible, non-traditional professional skills, and a greater sense of belonging in STEM. A virtual Blue Economy Career Exploration Fair is a series of "speed dating" rotations between small student groups and BE sector representatives, where students can and ask a diversity of questions about an individual’s professional skills, and a greater sense of belonging in STEM. A virtual Blue Economy Career Exploration Fair is a series of “speed dating” rotations between small student groups and BE sector representatives, where students can and ask a diversity of questions about an individual’s professional skills, and a greater sense of belonging in STEM. A virtual Blue Economy Career Exploration Fair is a series of “speed dating” rotations between small student groups and BE sector representatives, where students can and ask a diversity of questions about an individual’s professional skills, and a greater sense of belonging in STEM.

Additional Authors: Samuel A. Soule. University of Rhode Island; Deborah Smith, University of Rhode Island; Tara Hicks Thornton. University of New Hampshire; Patrick Flanagan. University of Rhode Island; Liz Hoadley, NOAA Ocean Exploration.
Session Descriptions - Wednesday

**Carly Carmack, Portsmouth Public Schools (Churchland High School)**

No Marine Science Class? No worries! If you’re like me... you have so much passion and excitement for bringing marine science into the classroom. busut you teach core biology or ecology classes with marine science concepts in your curriculum while still following all of the state standard requirements! You’ll meet the Pacific Northwest Tree Octopus and walk away with various activities and assessments geared toward scientific investigation and change and most also gain access to a Google Drive folder with samples of my resources. These resources can be used for various classes but have been created with high school biology and ecology courses in mind.

Jennifer Walker, The Mariner Marine Center; Jade Fugini-Laws; Cecilia Ledesma

Teaching Ocean Literacy through the Lens of Marine Mammals. Interested in teaching students about Sea Lions worldwide or Marine Science Careers in Antarctica or taking help to marine mammal experts and their ocean homes? The Marine Mammal Center (a partner of the organization advancing global ocean conservation through rescue and rehabilitation, scientific research, and education) is sharing online learning resources designed for educators to integrate with their classroom learning. During this session, we’ll introduce our Live By A Whisker (grades 3-5, 6-8) and Growing Up on Ice (grades 6-8) ocean literacy curricula and dive into a few activities designed to highlight work in global marine mammal conservation. These free comprehensive Educator Guides are connected with NGSS and OLPs and accessible on our website at https://www.marinemammalcenter.org/ Additional Authors: Life By A Whisker. Karina Abou-Chak and Alana Springer. Educators. The Marine Mammal Center. Growing Up on Ice Sara Smith and Raymo Poe. Educators. The Marine Mammal Center

Valerie Cournoyer, Armit High School Regional Health

**[TER]** Using Optical Illusion Art to Communicate Science Ideas. We will make an optical illusion art called an agamograph. This art is well suited to show cross cutting concepts including cause and effect, stability and change, and other perfect for climate change and solutions. Aids, nocturnal and diurnal activities in habitats and glaciation topics. Two pictures are drawn (front and side) of a specific agamograph. One side of the agamograph will show the before image and the other will illustrate the after. Students create labels explaining their concepts and display work at school. Students and teacher work will be available. STEAM Day events will be shared.

**Concurrent Session #12: Wednesday, July 31—3:30 – 4:30 pm**

**Briania Andrews, Grand Bay National Estuarine Research Reserve**

[ACAD] BRACKISH (Biodiversity, Relationships, and Aquatic Chemistry Knowledge in Saline Habitats). BRACKISH is a three-year program utilizing place-based and hands-on learning to enhance environmental literacy skills in eighth grade students from coastal Mississippi. Students monitor water quality parameters in mock estuarine environments, including water quality issues and identify potential solutions to environmental issues. In this session, NMEA participants will learn about the BRACKISH program and engage in a “town hall” meeting activity from their classroom to discuss water quality issues impacting a common residential area. The group will then be challenged to think outside of our everyday environmentally conscious mindset and work together through unfamiliar lenses to find potential solutions. Additional Authors: Dennis McGrury, Baltus J. Oyster Project; Kristin Schreiber

**BCT** Classroom Teacher Collaboration for Place-based Curriculum Design in NYC. Billion Oyster Project provides place-based, inquiry-driven curricula for teachers, which involves collaboration with teachers as part of a “pilot program” that pays them to use the curriculum and provide feedback. Our two pilot programs over the last two years comprised 18 teachers to pilot up to 30 lessons. Through regular discussion and written responses, teachers provided meaningful feedback that improved the final curriculum, which are now available online free for our presentation will describe the recruitment of teachers, biweekly meetings, editing, and results from teacher evaluations. This process of engaging teachers directly, and paying them for their time, significantly improves our curriculum and ensures that we spend time writing material that teachers will actually use.

Elisa Caret, Billion Oyster Project; Kristin Schreiber

**[CONF]** Bring Ocean Literacy into Your Classroom with National Marine Sanctuaries. Discover exciting educational materials, focused on a new free Ocean Literacy curriculum. This curriculum makes it easy to teach the seven Ocean Literacy principles while meeting NGSS, Common Core and Climate Literacy standards targeting grades k-12. Also learn about tolloulous educational resources that allow you to explore NOAA videos, lesson plans, background information, webinars, web stories, virtual reality, infographics, and much more about a variety of topics, including coral reef ecosystems, whales, and ocean sound and the impact of noise. Explore all of this and our exciting and interactive virtual reality content through this engaging session. Additional Authors: Claire Fackler, National Education Liaison, NOAA’s Office of National Marine Sanctuaries

**[MET]** Rippled Effect: Using Unconventional Partnerships to Increase Impacts of “Wicked” Marine Education. Small educational staff with big responsibilities! No problem! This interactive session will explore partnerships models that can increase the impact and reach of your marine education programs. Case studies will be shared that highlight how the S.C. Sea Grant Consortium’s two-person education team engages in partnerships to extend programs and increase impacts. Partnerships including councils, museums, science programs, and public/private sector organizations to further our work in developing the skills of K-12 teachers and school leaders to help students develop a love for the ocean and related careers. Title 1 school engagement, educator professional development, and scientific research. Come join the session and receive “wicked” educational resources, engage in hands-on activities, and participate in small group discussions related to partnerships and your specific program needs.

Kelsey Carmichael, Center for Coastal and Ocean Mapping; Tara Hicks Johnson

**[MET]** Marine Robotics: A Lesson Plan Using LEGO. In this session, you will learn how to turn standard LEGO robotics elements into underwater robots inspired by marine exploration technology. This activity is designed for middle school-age students, both in and outside of the classroom, as it can be modified to take anywhere from 30 minutes to multiple class periods. The goal of the activity is for students to gain hands-on experience building a device that on a large scale, is used to solve real-world marine issues. Students will learn how to identify a marine problem and then choose and execute a design to solve this issue.

Grace Simpkins, WHOI Sea Grant

**[310]** Ocean Currents and Overflows: hands-on physical oceanography in the classroom. I will provide an overview and demonstration of our lesson plan exploring ocean currents and specifically “underwater waterfalls”, i.e., overflows in the North Atlantic. I will share editable slides that include a quiz, instructions for a hands-on experiment, and two videos (a video presentation by one of the researchers introducing themselves and their research, and a video of the entirety of their experiment). I will also provide feedback. Our two pilot programs over the last two years comprised 18 teachers to pilot up to 30 lessons. Through regular discussion and written responses, teachers provided meaningful feedback that improved the final curriculum, which are now available online free for our presentation will describe the recruitment of teachers, biweekly meetings, editing, and results from teacher evaluations. This process of engaging teachers directly, and paying them for their time, significantly improves our curriculum and ensures that we spend time writing material that teachers will actually use.

Grace Simpkins, WHOI Sea Grant

**[310]** Encouraging Student Voice and Choice while Developing Driving Questions and Student Designed Field Adventures. Join us for a workshop that will walk you step-by-step through a student led decision making process to develop student driving questions that result in Student Designed Field Adventures. Grosvenor Teacher Fellows transfer their on-board experience into transformative ways to teach students, engage colleagues, and bring new geographic awareness into their learning environments and communities. Learn about a national and local platform for the classroom. Educators will share a collection of teacher-designed activities and resources. Participants are encouraged to bring their laptop, practice with the controls, access educator resources for the Deep Sea module, and learn how to bring this free web-based resource into the classroom. The experiences within World Ocean Explorer will captivate young learners, ensuring a deeper understanding of marine science concepts, focusing first on hydrothermal vent systems and whale falls, with endless possibility for curricular extension. Learn about more WorldOceanExplorer.org opportunities. Additional Authors: Nell Herrmann, marine science educator. Blue Hill Consolidated School, Maine

Katie Lodes, St. Joseph Academy, St. Louise, MO

**[TER]** Getting in the world to bring the world to your classroom. The Grosvenor Teacher Fellowship (CTF) is a professional development opportunity for pre-K-12 educators made possible through a collaboration between Lindblad Expeditions and the National Geographic Society. Through a comprehensive application process, educators are chosen to travel aboard a Lindblad Expeditions’ voyage for a life-changing, field-based experience. Grosvenor Teacher Fellows transfer their on-board experience into transformative ways to teach students, engage colleagues, and bring new geographic awareness into their learning environments and communities. Learn about a national and local platform for the classroom. Educators will share a collection of teacher-designed activities and resources. Participants are encouraged to bring their laptop, practice with the controls, access educator resources for the Deep Sea module, and learn how to bring this free web-based resource into the classroom. The experiences within World Ocean Explorer will captivate young learners, ensuring a deeper understanding of marine science concepts, focusing first on hydrothermal vent systems and whale falls, with endless possibility for curricular extension. Learn about more WorldOceanExplorer.org opportunities. Additional Authors: Nell Herrmann, marine science educator. Blue Hill Consolidated School, Maine

Domińska Wojcieszek, European Marine Science Educators Association (EMSEA)

**[TER]** Advancing Ocean Literacy Through the Network of European Blue Schools. This session will present the work of the Network of European Blue Schools (NEBS), an informal network of European Commission, with over 350 members from EU Member States and associated countries. It will provide insights into NEBS’s role in promoting ocean literacy in Europe. CEESSP, an informal network of European Commission, with over 350 members from EU Member States and associated countries. It will provide insights into NEBS’s role in promoting ocean literacy in Europe.

Dominika Wojcieszek, European Marine Science Educators Association (EMSEA)

**[TER]** Empowering youth to take action to build climate resilience through an engaging activity book. V-WEC’s Environmental Literacy Program supports formal and informal education projects that teach children, youth, and adults how to help their communities become more resilient to climate change. In 2020 NOAA published its Community Resilience Education Theory of Change which identifies pathways through which environmental literacy leads to resilient communities. To better engage educators and students, a companion activity book was created that provides activities for kids to learn about community resilience and taking action in their communities. Co-developed with diverse partners and NOAA grantees, the activity book serves as a helpful learning tool for students. Come discover how you can use this activity book with your audiences. Additional Authors: Maggie Beetsstra, Senior Climate. Education Researcher, Nurture Nature Center; Kathryn A. Semmens, Science Director, Nurture Nature Center; Maggie Allen, Director, Climate. Health Program Policy Coordinator, NOAA

Shodaasha Green, National Oceanic and Atmospheric Administration

**[TER]** Advancing Ocean Literacy Through the Network of European Blue Schools. This session will present the work of the Network of European Blue Schools (NEBS), an informal network of European Commission, with over 350 members from EU Member States and associated countries. It will provide insights into NEBS’s role in promoting ocean literacy in Europe. CEESSP, an informal network of European Commission, with over 350 members from EU Member States and associated countries. It will provide insights into NEBS’s role in promoting ocean literacy in Europe.
Undersea Technologies.

Julie Huber

past projects and upcoming funding opportunities for the 2024 - 2025 school year! Additional areas, funding education programming for diverse youth to learn about the ocean, develop or NOAA offices to expand the Ocean Odyssey Grants to include additional ocean science focus areas, funding education programming for diverse youth to learn about the ocean, develop or and encouraged to find solutions to local environmental problems. During this session, I will discuss the program’s implementation, lessons learned, and preliminary evaluation results. Additional Authors: Dennis McCurry, Program Development Manager. Grand Bay NERR

Melissa Brodeur; Nicole Palma

NMEA Engagement in a Needs Assessment of the National Ocean Sciences Bowl. The National Ocean Sciences Bowl® (NOSB) is a nationally recognized and acclaimed high school academic competition that provides a forum for interested students to test their knowledge of ocean and freshwater sciences. After 26 years of competition, the NOSB, in partnership with Collaborators Consulting Group, has conducted a programmatic needs assessment to inform a reimagining of the program to ensure it continues to achieve its goals and the continued gap in environmental and earth sciences in public education. Diverse stakeholder input, via surveys, will be sought from NMEA attendees to better understand the evolving needs of the ocean education community. Additional Authors: Stacey Keston and Leigh Rauk, Collaborators Consulting Group

Emma Ferrante

From Shipwrecks to Sharks: Bridging Marine Science and Maritime History through Community-Focused Education. Join me to explore The Mariners’ Museum and Park’s interdisciplinary approach to marine education. Discover how we, as a repository of the US Monitor shipwreck artifacts, utilize a collections-based, community-focused strategy to engage students with our Shipwreckings! Program. Through our innovative teaching methods, we seek to collectively collaborate and learn together.
Wicked Good Marine Education

Jessica Mühliln

Infusing eDNA principles throughout two Ocean Studies curricula, from guided practice to application: Marine Maritime Academy’s Coming School for Ocean Studies established a new undergraduate program, Coastal and Marine Environmental Science (CMES). In the process of developing the new major, courses in CMES, Marine Biology, and Oceanography were revised to create interdisciplinary programs that will train environmental DNA (eDNA) across the curriculum. Faculty developed laboratory modules around two projects. The first project was a bio-surveillance and community characterization of anadromous fish/river herring on the Bagaduce River, ME using eDNA techniques. The second project was a multidisciplinary laboratory sequence evaluating the microbial communities across the Belfast Bay, ME pockmark fields using an eDNA approach. Additional Authors: Sarah O’Malley, LeAnn Whitney, and Kerry Whitaker. Coming School of Ocean Studies, Marine Maritime Academy

Sierra Muñoz

From Coastal Research to Classroom Resource. Educational outreach programming is braided into the research plan for many of the scientists at Northeastern’s Coastal Sustainability Institute and Marine Science Center. We highlighted several recent NSF-funded projects which integrated K-12 or community outreach programs and resources, including studies on microplastic pollution in waterways, salt marsh ecology, and genomics, and how the resulting resources can be utilized by educators and the public.

Laura O’Dwyer, Elsa Walsh, Daniel Raphael

Measuring Teachers’ Prioritization of Ocean Science in Middle and High School Classrooms: Introduction to the 2024 K12 Study. The MARINEK12 2024 Study is the first nationally representative study of ocean science coverage in K12 classrooms. In spring 2024, a representative sample of 2,745 middle and high school teachers were invited to complete an online survey that focused on topics including their background in ocean science, practices in teaching ocean science and novel topics, and encouragements and barriers to teaching ocean science. The poster will primarily focus on how the nationally representative sample of science teachers prioritize ocean science in their classrooms but will also present evidence on the psychometric properties of the instrument.

Sachiko Oguma

Regional Ocean Literacy for Classes in Japan. As ‘Ocean Literacy for All’ by UNESCO-IOC indicates “Ocean literacy should be understood as the development of a civic relationship with the ocean,” the way we interact with the ocean is likely to differ among countries and even among regions within Japan. Within the Ocean Education Pioneer School Program (PSSP). Regional Ocean Literacy (ROL), was developed to link learning about the natural environment, cultural history, and industry of the region to understanding of each principle, to acquire a way of thinking to live with the ocean in that region.

Monika Pelz

What DO teachers want? Making the Ocean more accessible for You! This poster proposes to be a little different than most - rather than sharing our ideas, we will present questions and ask participants to write answers on Post-it notes and cover sheets. These will then be collected and used to write a follow-up article from the conference. Contextual information will be provided to shape and guide responses, but the intention is to learn from the viewers and audience.

Maya Pincus

Open-access ocean science lesson plans: A request for input from educators. The JOIDES Resolution website (joidesresolution.org) hosts free educational materials developed during scientific ocean drilling expeditions over two decades. Resources range from children’s books and video games to lesson plans for learners of all ages, addressing topics such as climate change, plate tectonics, paleontology, and more. Given the broad timeline over which these materials were developed, they vary greatly in terms of style and content. As such, we are in the process of revising these 100+ resources for conformity and quality. This poster outlines our current thinking around resource revision, and solicits input for next steps forward. Additional Authors: Sharon Cooper (International Ocean Discovery Program), Ed Rebeck (AGI), Lindsay Mossa (AGI), Lauren Brase (AGI), Sequoyah McGee (AGI)

Elizabeth Sargent

ANCHORS: Achieving New Course Heights; Opportunities for Research with Students. Herein we discuss the launch of preliminary assessment of an early research experience program. ANCHORS, on marine science undergraduates. ANCHORS integrates research into the curriculum, focusing on student-led projects within a freshwater learning community and runs parallel to the required first year experience course. It aims to build a supportive community, clarify academic pathways, and offer research opportunities. Using a mini-CEURE approach, it enhances accessibility to research while reducing faculty time constraints. Changes in self-efficacy, science identity, networking, and STEM persistence are being tracked. Results will guide best practices for student success and retention in Earth and ocean science programs.

Warren Sevaaetasi; Naomi Galea’i

Building Resilient Communities in American Samoa. The people of American Samoa have always been dependent and reliant on their natural resources for sustenance and livelihood. The Department of Marine and Wildlife Resources promotes management, conservation and sustainable development of American Samoa's Coral Reefs and their supporting ecosystems through programs like the Community-based Fisheries Management Program. A co-managed approach by the department and villages to develop Village Management Plans and designate Marine Protected Areas help ensure that Village Communities have a sustainable way of protecting and using their resources. Empowering and preserving the ‘Fa’a Samoa’ the process utilizes traditional village council meetings with Matasais(Chiefs) Untitled Men, Women and Youth Groups. These meetings identify different resource users, historical village resource profiles, village legends, tales and tapu. Additional Authors: Maria Vaafanua, Division Head, Christina Samaa, Education Assistant, Naomi Galea’i, Information Technician, Department of Marine &amp; Wildlife Resources

Mirián Sutton

Creating Broader Impacts during a Research Cruise with a Virtual Experience for Academic and General Audiences. ’Virtual Research Cruise’ guides students (middle grades/high school/college) and general audiences through the scientific methods and technologies incorporated during a 2-week investigation focused on microbial oceanography. Students can work independently or in teams to complete the activity as a stand-alone lesson or within a marine science curriculum. Photo-journals, videos, and live feeds engage students as they explore the relationship between phytoplankton blooms and ocean upwelling cycles. Students will be able to describe the responses of phytoplankton during various phases of coastal ocean upwelling. A certificate of completion is available for download after completion of the activity.

Mirián Sutton

Using Long-Term Ecological Research (LTER) Data to Assess Penguin Population Dynamics Along the West Antarctic Peninsula. This activity guides students as they explore ecosystem dynamics among three Antarctic penguin species and analyze two Long-Term Ecological Research (LTER) data sets and supporting graphics for cause and effect and feedback relationships driving changes observed in Adélie, Chinstrap, and Gentoo penguins along the West Antarctic Peninsula. The LTER program began in 1974 and has been collecting annual data in this region on a variety of ecological interactions. This session will demonstrate the use of the Student Lab Sheet. Student data sets, Teachers data sets (including answer keys), and Tutorials for accessing and utilizing the LTER database.

Dominika Wojcieszek

Harnessing Sports for Ocean Literacy: Insights from the OSES Project. The ‘Ocean Sustainability through Education and Sport’ (OSES) project aligns with the European Union’s Work Plan for Sport, recognizing the potential of sports activities in addressing climate change challenges. It aims to empower sports federations and local stakeholders to foster eco-responsible behaviors in youth. The presentation will share insights from OSES’s initial phase, focusing on assessing sports organizations’ educational programs and initiatives for ocean preservation. Highlights will include the development of a good practices handbook showcasing successful European projects integrating ocean literacy into water sports, demonstrating the vital role of sports in environmental education and awareness.
Exhibitors

Exhibits will be open in Ziskind Lounge Monday, July 29 from 10:15 am to 5 pm and Tuesday, July 30 from 8 am to 5 pm. The dedicated Exhibit session is Monday from 2:30 - 3:30 pm.

Aestes Art / Wonderful Whales
Algalita Marine Research and Education
Atlantic White Shark Conservancy
Bermuda Institute of Ocean Sciences
Boston Malacological Club
Boston Sea Rovers
Bow Seat
Educational Passages
GOMMEA
Maine Maritime Academy
Marine Biology Lite
MME
MiniOne Systems
Nature’s Classroom
NMEA

NOAA B-WET
NOAA Education
NOAA Fisheries
Ocean River Institute
SAME
Sea Education Association
Stone Living Lab
Tall Ships America
The NEED Project
URI GSO – NOAA OECI
Vineyard Wind
Wade Institute for Science Education
Woods Hole Oceanographic Institution
Woods Hole Sea Grant
World Ocean Observatory
We are teachers, informal educators, students, and institutions, working to develop a marine literate society and promote awareness of the ocean world.

MASSECHUSETTS MARINE EDUCATORS

This is presented to:

[Signatures]

Certificate of Participation

for attending the 2024 National Marine Educators Association (NMEA) annual conference held July 28 - August 1 in Boston, MA, co-hosted by Massachusetts Marine Educators (MME), The full conference included over 14 hours of in-person sessions and activities with a focus on marine education.

LINDSAY PATTERSON
President, National Marine Educators Association

EMILY DOUWAN
President, Massachusetts Marine Educators

[Signature]
We are teachers, informal educators, students, and institutions, working to develop a marine literate society and promote awareness of the ocean world.
NMEA 2025
LAFAYETTE, LA | JUNE 29 - JULY 3