



MASSACHUSETTS MARINE EDUCATORS
49TH ANNUAL MEETING

SPECIES' SHIFTS IN A WARMING OCEAN

SATURDAY, MAY 3, 2025 • 8:30AM - 4:30PM

WOODS HOLE OCEANOGRAPHIC INSTITUTION (WHOI)

Keynote Presentations



Warming Fast & Slow: Marine Predator Response to Episodic and Long-Term Heat

Dr. Laura McDonnell; Postdoctoral
Investigator, Biology, WHOI



Eco-Evolutionary Dynamics of Range Expanding Species in the Gulf of Maine

Dr. Remy Gatins; Assistant Professor,
Northeastern University

8:30am..... Registration
Coffee & Light Breakfast
Clark Building, 5th Floor
9:00am..... Welcome
9:15am..... Keynote 1
10:00am.... Exhibits/Break
10:30am.... Keynote 2
11:15am..... 'Manipulating Data,
Making Art' (Group Activity)
11:45am.... MME Annual Meeting,
MME Awards, & Lunch
1:00pm..... Workshops - Session 1
1:55pm..... Workshops - Session 2
2:50pm..... Tours
4:15pm..... Reception
@ Sea Education Association



Welcome to the 49th MME Annual Meeting and Conference at WHOI

On behalf of MME, I am pleased to welcome you to this year's Annual Meeting and Conference. This gathering represents a vibrant community of professionals dedicated to advancing ocean literacy and fostering a deeper understanding of our marine environments. We are excited to offer a program that reflects the passion, innovation, and expertise of our field. I would like to express sincere appreciation to Grace Simpkins and the rest of the planning committee for their outstanding work in organizing this year's conference. Their dedication and attention to detail have created a meaningful and engaging experience for all. We look forward to staying connected and continuing to support one another beyond the conference.

Emily Duwan, MME President

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Agenda

-  **8:30 am** **Registration** in Clark Building, 5th Floor 
- 9:00 am** **Welcome and Opening Remarks**
- 9:15 am** **Keynote: Dr. Laura McDonnell**
Postdoctoral Investigator, Biology Department at the Woods Hole Oceanographic Institution
“Warming Fast & Slow: Marine Predator Response to Episodic and Long-Term Heat”
- 10 am** **Exhibits and Break**
- 10:30 am** **Keynote: Dr. Remy Gatins**
Assistant Professor, Marine and Environmental Sciences at Northeastern University
“Eco-Evolutionary Dynamics of Range Expanding Species in the Gulf of Maine”
- 11:15 am** **Manipulating Data, Making Art Group Activity**
Transforming Northeast US Fisheries trawl data and sea surface temperature data into colorful art
- 11:45 am** **Annual Meeting, MME Awards, and Lunch**
- 1:00 pm** **Workshops -- Session 1**
- 1:55 pm** **Workshops -- Session 2**

Information about the keynote speakers is on page 4; Workshop descriptions are provided on pages 5 and 6.

- 2:50 pm** **Field Trips** (sign up when you check in)
- Oceanographic sampling cruise with the Zephyr Education Foundation (must have signed up at registration)
 - Self-guided coastal resiliency walking tour through Woods Hole
 - Tour of WHOI’s Ocean Sensors and Observing Systems (LOSOS) Lab
 - Tour of Sea Education Association’s tall ship Corwith Cramer
 - Self-guided tour of Woods Hole Village

4:15 pm **Social Reception** at SEA Education Association, Madden Center, 171 Woods Hole Road. All are invited for refreshments and socializing! SEA is on the left, after the set of lights, as you drive toward Falmouth; the Madden Center is at the top of the drive, and parking is nearby.



Keynote Speakers



Dr. Laura McDonnell – Warming Fast & Slow: Marine Predator Response to Episodic and Long-Term Heat

Dr. Laura McDonnell is a Postdoctoral Investigator in the Biology Department at the Woods Hole Oceanographic Institution. Her work bridges ecology, oceanography, and climate models to understand how climate variability, including marine heatwaves, affects highly migratory predators. She aims to produce actionable data to support dynamic, climate-informed fisheries management and conservation.



Dr. Remy Gatins – Eco-Evolutionary Dynamics of Range Expanding Species in the Gulf of Maine

Dr. Remy Gatins is an assistant professor at the Northeastern Marine Science Center in the Marine and Environmental Sciences Department. Her research is broadly focused on the ecology and evolution of marine organisms. She is interested in understanding the ecological and evolutionary processes that drive biodiversity patterns in a rapidly changing environment at the genomic, population, and species-level. Evolutionary processes such as adaptation and speciation—the process by which new species arise—depend on the population’s genetic makeup. As climate change continues to accelerate, species’ persistence will depend on their populations’ ability to adapt quickly to new demographic and environmental conditions.

Over recent decades, rising global temperatures have dramatically altered ecosystems, particularly by shifting the geographic ranges of many species as they seek optimal environmental conditions. This effect is especially pronounced in marine environments, where faster warming and fewer physical barriers allow species to track changing temperatures more readily than on land. However, the survival and long-term persistence of populations expanding into new areas depend on factors beyond simply following favorable climates, including genetic diversity, population size, and the ability to adapt to new ecological challenges. The Gulf of Maine (GOM), stands out as one of the fastest-warming marine regions worldwide, prompting northward shifts in various marine species, including ecologically and commercially important species, such as black sea bass and blue crabs. These changes present both challenges and opportunities, as fisheries must adapt to shifting species distributions while managing existing pressures. Efforts to understand the ecological and evolutionary processes underlying these range expansions will be necessary to minimize impacts on native species and develop sustainable new fisheries. In this talk, I will present some of my current research ranging from eDNA monitoring methods to the impacts of range expansions on population connectivity and overall fitness of two species expanding into the GOM, Black sea bass (*Centropomus striatus*) and Blue Crab (*Callinectes sapidus*).



Afternoon Workshop Session 1 (1:00-1:45)

Shark Teeth and What They Eat

Clark 507

Join the Atlantic White Shark Conservancy team as they showcase various shark jaws, fossils, and discuss how a shark's teeth enable them to capture their prey. Participants will take part in two fossil activities and go home with their own shark tooth!

Presenters: Marianne Walsh and Michaela Nix, Atlantic White Shark Conservancy

Eelgrass is Educational!

Clark 201

Explore eelgrass ecology and the research methods used to monitor and protect it! Eelgrass, *zostera marina*, is a perfect study species to introduce students to ecosystem services, genetic diversity, and habitat restoration science. We'll share free teaching materials for Grades 6-12, developed in partnership with researchers at Northeastern University's Marine Science Center, to help students learn how eelgrass & other species of seagrass support biodiversity, sustain fisheries populations, and protect shorelines all along the East Coast.

Presenters: Sierra Muñoz and Sarah Beecy, Northeastern University Marine Science Center

Crustacean Crisis – Engaging young learners with Invasive Species

Clark 237

Join educators from The Trustees at the Crane Estate for an engaging workshop exploring the use of invasive species as an entry point to engage various audiences in community science. Through monthly species monitoring, Crane volunteers and educators use that data to help young students understand climate-driven habitat shifts. With an emphasis on place-based learning and hands-on activities, participants will also learn developmentally appropriate strategies to meaningfully introduce complex climate science concepts to K-2 audiences.

Presenters: Sarah Morris and Val Perini, The Trustees

Exploring Non-native Marine Species Movement

Clark 271

This is an engaging, hands-on workshop designed to introduce students to how to analyze and interpret non-native marine species data. Using an interactive website, participants explore spatial and temporal patterns of species distribution using timelines, site-specific pop-ups, and customizable data layers. The activity emphasizes real-world applications, encouraging discussions about the effects of warming waters on marine species and the role of data-driven tools in supporting scientists, policymakers, and communities.

Presenters: Carolina Bastidas and Wendy Zhang, MIT Sea Grant, MIT Climate Sustainability Consortium

Afternoon Workshop Session 2 (1:55-2:40)

Using publicly available genomic data and tools to explore marine biodiversity Clark 507

We will use data and tools provided by NIH research databases to explore genetic diversity of a variety of marine organisms. Teachers will be able to implement a lesson that allows students to explore phylogenetic and evolutionary relationships, make predictions about relatedness based on physical characteristics, and confirm their predictions using genomic data. Please bring computers if possible.

Presenter: Don Pinkerton, LynnLab, Inc.

Taking the Sting Out of Summer: Using Citizen Science to Better Understand Jellyfish Blooms Along Nantucket Sound Clark 201

Since 2007, Popponesset Beach in Mashpee, MA, has had a reoccurring influx of “new” stinging jellyfish species during the summer months; an Aurelia sp (moon jelly) capable of delivering a mild but impactful sting to humans and what is likely Chrysaora chesapeakei (Atlantic Bay Nettle) which migrated to the area from the mid-Atlantic in the mid-2010’s. The Popponesset Water Stewardship Alliance has been studying jellyfish species in Nantucket Sound and its surrounding embayments for the past several years using a combination of genetic barcoding, jellyfish settling plates, and the jellyfish sting kit program along Popponesset Beach. This presentation will focus on these initiatives, which have involved significant involvement from high school interns, and how volunteer citizen scientists can help advance our work.

Presenter: Nicole Corbett, Popponesset Water Stewardship Alliance

PolarSTEAM: Virtual and Field Opportunities for Educators Clark 237

An overview of the PolarSTEAM program for educators followed by personal experience on a research expedition to the Juneau Icefield with the program. Followed by discussion of developing educational resources and how science teachers and science-based organizations can collaborate with math teachers to facilitate utilization of science content in math courses to increase student engagement and exposure to STEM topics.

Presenter: Lynn Brennan, The Putney School

Species’ Shifts: A Local Phenomenon Clark 271

Using results from a small descriptive study, this workshop focuses on species’ shifts in a local intertidal community. Participants will use this phenomenon to generate questions and plan the next steps that students might take to investigate their questions.

Presenter: Rosemary Rak, Wade Institute for Science Education at Manomet Conservation Sciences

MME extends its gratitude to our 2025 Exhibitors

Algalita Wayfinder Society
Be the Solution to Pollution
New England Aquarium
New England Coastal Wildlife Alliance
The Trustees
Sea Education Association
Stone Living Lab
Wade Institute for Science Education
Whale & Dolphin Conservation (WDC)
WHOI & WHOI Sea Grant

THANK YOU!

Massachusetts Marine Educators thanks all the generous members and friends who have donated funds to the MME Scholarship Account. These funds help deserving high school students attend the annual MME High School Marine Science Symposium.

Joseph LaPointe
Linda McIntosh
Annette Brickley
David Eatough
Don Pinkerton
Joan Pierce
T.J. Cullinane
Ali Mitchell

Jesse Melching
Matt Buchman
Nanette Cardon
James Cleere
Anne Smrcina
Aimee Bonanno
Jack Crowley
Mary Lou Nicholson

MME thanks all the conference planning committee members:

Grace Simpkins
Annette Brickley
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Linda MacIntosh
Pat Harcourt
Bob Rocha