UMass-Dartmouth/MME 29th Annual High School Marine Science Symposium

For High School Students

Thursday, March 20, 2014 8:00 AM to 1:00 PM

IMPORTANT INFORMATION: Please print your student's names and their choices of workshops in the order of preference. Return the form early. Workshops will be assigned on a first come, first served basis. Each workshop has a limit of 4 students per school (2 students per session). **This symposium is designed for high school students and their teachers. Teachers, do not forget to choose your own workshops!** Please note the fee this year is $10.00 per student. Questions? Contact Kathleen Streck@ 508-376-5872 or emailmulkerin@hotmail.com

Teacher's Last Name		School					
Teacher's First Name		Address					
Home Phone	( )	City		State		Zip	
email		School Phone	( )				

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RETURN BY MARCH 14, 2014

TO: Kathleen Streck
8 Rolling Meadow Drive
Millis MA 02054
(508) 376-5872
mulkerin@hotmail.com

Fee: $10.00 per student
Amount Enclosed $_____
Make checks payable to **MME**
Please indicate if your group will stay for lunch Yes No

NOTE: Confirmations and snow cancellation information by email only. Please check your emails for key conference updates.

31st Annual High School Marine Science Symposium
"Shift Happens!" Adapting to our Changing Environments
Thursday March 20, 2014 8:00 am – 1:00 pm
UMass-Dartmouth

Keynote Speakers

Cate O'Keefe, PhD
Fisheries Research Associate
School for Marine Science and Technology (UMass Dartmouth)

The Ones That Got Away: Avoiding Bycatch in Commercial Fisheries
Bycatch in commercial fisheries has caused conservation and economic problems for decades. The unwanted catch of non-targeted species can cause stock decline, loss of diversity, fishery closures and loss of revenues. But, how can we avoid unwanted species while targeting other species underwater? Cate O'Keefe, PhD, will present innovative solutions to avoiding bycatch from fisheries around the world, including programs developed for the New England scallop and herring fishing fleets.

Peter C. Stone
author/artist/educator
Ocean Academy

Waltzes with Giants, The Twilight Journey of the North Atlantic Right Whale is Peter C. Stone's moving portrait of one of earth's largest endangered mammals. Mystical and provocative, it is inspired by a real North Atlantic right whale (*Eubalaena glacialis*) and her threatened migrations from Atlantic Canada to her calving grounds off the coasts of Georgia and Florida. In the spirit of marine biologist and conservationist Rachel Carson's sea trilogy, the story blends sound science and art with a literary voice to evoke the wonder, the sorrow, and the conflicts associated with this member of the suborder Mysticetes (baleen whales).
Peter's keynote will present the context in which scientific research was transformed into this story for a broad audience. Combining mythological symbols with principles of living systems, the focus will be on how scientists have begun to resolve our cultural impacts (fishing gear, waste, and noise) on the spatial and acoustic habitat of the right whale.

Workshops

Workshop 1
Sea Scallops: Combining Science and Fishing
Erin Adams, Susan Inglis, and Jessica Garrity , School for Marine Science and Technology (SMAST) UMass Dartmouth
The SMAST Scallop Program works cooperatively with commercial fishermen to examine scallop biology through video surveys and laboratory experiments. This workshop will focus on how scientists and fishermen have worked together to map the seafloor and understand scallop biology. Students will perform a hands-on dissection of a scallop to take an up close look at the internal organs.

Workshop 2
How is your seafood grown? Aquaculture in New England
Seth Garfield, Dave Medeiros, Timarie Malo Program Director_for Aquaculture, Dean of Students, Director of Information Resources, Northeast Maritime Institute
Seth Garfield, Dave Medeiros, and Timarie Malo from Northeast Maritime Institute explore local Aquafarming.
Students will explore the various types of shellfish aquaculture that is cultivated in our coastal waters. Inspect and touch fish, shellfish, and seaweeds that are raised to be sold and consumed in New England. Of all of the shellfish currently consumed in the United States on a daily basis, 50% is imported. How is that 'fresh product'? Growing local shellfish guarantees quality and freshness. Aquaculture is an emerging science and industry in Buzzards Bay and other native waters. We will explore how to grow shellfish locally. Participants may sample and enjoy some of the products of Mother Nature with locally raised seafood. Will you dare to eat a raw oyster?

Workshop 3
Wrackline Investigation: CSI Beach-Style
Lauren Miller-Donnelly, Property Manager, Massachusetts Audubon Society's Allens Pond Wildlife Sanctuary
Explore the tangled beauty of the wrackline from a forensic standpoint and learn more about this often-overlooked beach micro-ecosytem. What washes ashore in the South Coast region and how do these exposed natural materials – animals, plants, shells and other bits of fodder, identify the local marine ecosystem and how are these materials used by others? What else washes ashore that is not naturally occurring and what does it tell us about local currents and events? This is a hands-on investigational experience.

Workshop 4
Face-ing Extinction: The North Atlantic Right Whale
Robert Rocha, Science Director, New Bedford Whaling Museum
Gain a better sense of the human-created hazards that face this critically endangered species as it navigates its annual migratory path along the U.S. east coast. A combination of visuals, artifacts, and activities comprise this session.

Workshop 5
Sharks of New England with special emphasis on the Basking Shark
Tiffany Davenport and Leah Horeanopoulos, New England Coastal Wildlife Alliance - NECWA
New England waters are home to many species of sharks that live and feed in our coastal waters. Two of the largest species that can be seen off Cape Cod are the great white shark and the basking shark. Learn how different and yet similar these two species are to one another. We will include information about ocean sunfish research on the shores of Cape Cod. Learn how you can become involved in citizen science by becoming a member of NEBShark, the New England Basking Shark Project. Your efforts will help scientists better understand these amazing pelagic fish. Free NEBShark sighting materials will be provided to all program participants.

Workshop 6
Protecting the Marine Environment from Nuclear Power Plant Operations
Karen Vale, Campaign Coordinator, Cape Cod Bay Watch
Participants will learn how nuclear power plants impact the marine environment, with a focus on work being done by Cape Cod Bay Watch to protect marine and coastal resources from the Pilgrim Nuclear Power Station's operations. Pilgrim, located in Plymouth, Massachusetts, has been degrading habitat in Cape Cod Bay for the past 40 years. We will learn about the impacts – chemical and thermal pollution, entrainment and impingement of marine organisms, and concerns about climate change – and what we can do about it.

Workshop 7
Doctoring Dolphins, Tending Turtles, Studying Seals
Kathy Zagzebski, Executive Director, National Marine Life Center
Presenter will introduce the concept of marine animal stranding and rehabilitation, discuss reasons for stranding and methods of rehabilitation, show a short video, demonstrate concepts with model animals, and discuss how wildlife rehabilitation plays an important role in ocean science and conservation.

Workshop 8
Wildlife Protection and Research: Life at the Beach
Jamie Bogart, Research Associate, Lloyd Center for the Environment
Learn about the coastal beach environment and it's endangered wildife. and the type of work performed by scientists on beaches. Participants will learn about the piping plover and diamondback terrapin (two familiar endangered species), and a brief mention of water birds used for 'beached bird' studies.

Workshop 9
Early Life History of the Black Sea Bass
Matthew Tweedie, Dartmouth High School, UMass Dartmouth
Learn about how earbones (otoliths) are used to determine age and growth rates in fishes. Important spawning and growth habitats in Southeastern Massachusetts will be highlighted.

Workshop 10
Vortex in a Tank
*Sanjiv Ramachandran and Sonaljit Mukherjee, Postdoctoral Research Associate, Graduate Studen*t*, UMass Dartmouth, School for Marine Science and Technology*
and Department of Physics. Participate in experiments using a rotating tank filled with water. The goal is to introduce in a non-mathematical and visual way, ideas central to atmospheric flow and weather.

Workshop 11
Northeast REEF Fish Identification
Robert Michelson, President, Photography By Michelson, Inc
Participants will learn how to identify 56 species of marine fish found in New England waters using underwater photography as a teaching tool.

Workshop 12
Ocean Exploration through Art
Anne Smrcina, Education Coordinator and MME marine art contest director, Stellwagen Bank National Marine Sanctuary
Each year, the Massachusetts Marine Educators sponsors a marine art contest for K-12 students. This year the theme is "Amazing Ocean Creatures of Stellwagen Bank National Marine Sanctuary" and the deadline is April 25. In this workshop we will observe an array of fascinating images of sanctuary animals and investigate ways that students can learn more about these living treasures found in waters off the Massachusetts coast. Through art, students can build a greater awareness of the marine environment and the special adaptations of the species that live there.

Workshop 13
What is up with CO2?
David J. Welty Science Teacher, Fairhaven High School and Connecting Oceans Academy/Ocean Explorium
Have you ever wondered what the issue is with CO2 and the environment. How does CO2 contribute to climate change and global warming? How does CO2 cause ocean acidification? And, how might we remove excess CO2? Dr David J. Welty will use data from satellites, demonstrations, and hands-on activities to explore CO2 and climate change.

Workshop 14
TBA

Workshop 15
The Seagoing Scientist – Skills They Need And What They Find
Juliana Miller and Elizabeth Dorr, Administrative Science Coordinator and Admissions Counselor, Sea Education Association
Marine scientists can be found working in many settings, from classrooms to labs to offices. This session will focus on the skills that scientists need to work on research vessels in the deep ocean. Come learn about how SEA conducts science at sea, and the skills you need to be a sailing scientist, including knot tying and critter identification.

Workshop 16
The Eye of Wonder through the Scientist and Artist
Peter Stone, Artist, Jennifer Saunders, Science Teacher, Fall River Schools & NSF Master Fellow @ UMass/CUSP
Students will experience nature journaling through the eye of the scientist and the artist. Both perspectives will be explored through observation, descriptive writing or artistic sketching. Peter C. Stone will share images from his forthcoming book about visual thinking strategies called *Dreams to Dance in Moonlight*.

Workshop 17
Tracking Fish to Restore a River System
Nancy Church, School Programs and Interpretive Services Coordinator, Waquoit Bay National Estuarine Research Reserve
How is fish science similar to driving through a highway toll booth? This workshop answers that question and more as we explore how scientists track fish to discover their habits, habitats and site preferences, then use this information to target restoration efforts along a tidal river on Cape Cod.

Students attend both keynotes and two workshops. Lunch will be available for purchase at UMass Dartmouth commuter cafeteria.

The cost of attending is $10 per student.

For additional information please contact:

Margaret Brumsted
margaretbrumsted@dartmouthschools.org