

EXHIBITORS

Boston Harbor Islands National Park Area
Boston University Marine Program
Hull Lifesaving Museum
MIT Sea Grant
Massachusetts Marine Educators
Mass Ocean Alliance
Massachusetts Water Resources Authority
National Oceanic and Atmospheric Administration
NOAA's Stellwagen Bank National Marine Sanctuary
New Bedford Whaling Museum
New England Aquarium
U.S. Geological Survey
University of Massachusetts/Boston
Waquoit Bay National Estuarine Research Reserve
Whale and Dolphin Conservation Society
Woods Hole Oceanographic Institution

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Back Cover -- Humpbacks Teapot and Tectonic Feeding by WCNE/SBNMS file photos,
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Massachusetts Marine Educators
Massachusetts Water Resources Authority
Boston Harbor Islands National Park Area
University of Massachusetts/Boston
Mass Ocean Coalition
Stellwagen Bank National Marine Sanctuary

Boston Harbor Educators' Conference

Saturday, October 13, 2007

*Celebrating milestones
in the history of Boston
Harbor, the marine
waters off the shores
of Massachusetts and
Stellwagen Bank
National Marine
Sanctuary*



Fifteen Years and Moving Forward!

Stellwagen Bank National Marine Sanctuary -- 15th anniversary
Boston Harbor Islands National Park Area -- 10th anniversary
15 years of the Boston Harbor cleanup

at University of Massachusetts, Boston Harbor Campus

Boston Harbor Educators' Conference

Saturday, October 13, 2007

Fifteen Years and Moving Forward!

Welcome to all teachers, environmental educators, scientists, naturalists, and interested citizens.

This year marks several important milestones in the environmental history of the waters of Boston Harbor and off the coastline of Massachusetts. It was 15 years ago that Congress designated Stellwagen Bank National Marine Sanctuary, one of only 14 sites in a system of special marine protected areas around our nation. Since that time the sanctuary, located some 25 miles east of Boston, three miles north of Cape Cod and three miles south-east of Cape Ann, has matured, becoming an important voice in marine research, education, resource protection and marine policy.

Also 15 years ago, the MWRA made significant strides to curtail sludge dumping into Boston Harbor, resulting in a significantly cleaner and healthier marine environment along the Massachusetts coastline.

And 10 years ago, those green gems scattered along Boston Harbor -- the Boston Harbor Islands -- received additional protection when they were added to the National Park system. Today, the Boston Harbor Islands National Park Area is jointly managed by a partnership of local, state and federal agencies in trust for the American people.

We hope today's conference will provide you with valuable new insights into these ocean treasures and inspire you to bring these local examples into your lesson plans. In the past 15 years we have made great strides in protecting and learning about our marine environment. As we move into the future, the opportunities for exploration and discovery exist for all levels of learners -- from students to scientists. Enjoy your day and leave with a greater appreciation of the ocean treasures just off our shore.

MME Membership

Massachusetts Marine Educators is a dynamic grassroots organization of teachers (kindergarten through college), representatives from museum, aquaria, government and business, and individuals. Our goal is to create a marine literate society by integrating marine studies into existing curricula. MME develops and shares curriculum materials, holds frequent meetings, and helps provide in-service teacher training. Membership is \$20 per year, which includes a subscription to Flotsam & Jetsam, our newsletter, and notices of upcoming events, including the annual meeting in Woods Hole and the High School Science Symposium. You are welcome to explore our Web site at: www.massmarineeducators.org.

CONFERENCE SPECIAL: Individuals registering for the Boston Harbor Educators' Conference can receive a discounted half-year membership for October 2007-April 2008. The \$10 fee provides all membership benefits.

The regular membership year begins May 1.

Please make checks payable to MME and return this form and your payment of \$10 to the Boston Harbor Educators' Conference registrar or mail to:

**Massachusetts Marine Educators
Attn: Gail Brookings, Treasurer
184 Highland Street
Taunton, MA 02780**

Name: _____

Title: _____

Organization: _____

Street: _____

City: _____ **State:** _____ **Zip:** _____

Email Address: _____

Notification of publication of Flotsam & Jetsam will be sent electronically. Members can download each issue from the MME Web site. If you are unable to receive electronic messages, please notify Howard Dimmick, F&J Editor, 7015 Avondale Road, Fort Collins, Colorado 80525 or e-mail him at dimmick@esteacher.org and he will mail out a printed copy.

BHEC Organizing Committee

Many thanks to these committee members who worked diligently and tirelessly to bring you this day.

Chair: Peg Collins

Joe Balsama

Mary Corcoran

Joe LaPointe

Linda McIntosh

Anne Smrcina

David Weinstein

Gail Brookings

Kelly Fellner

Douglas Maitland

Rob Moir

Chris Sweeney

Pauline Westhaver

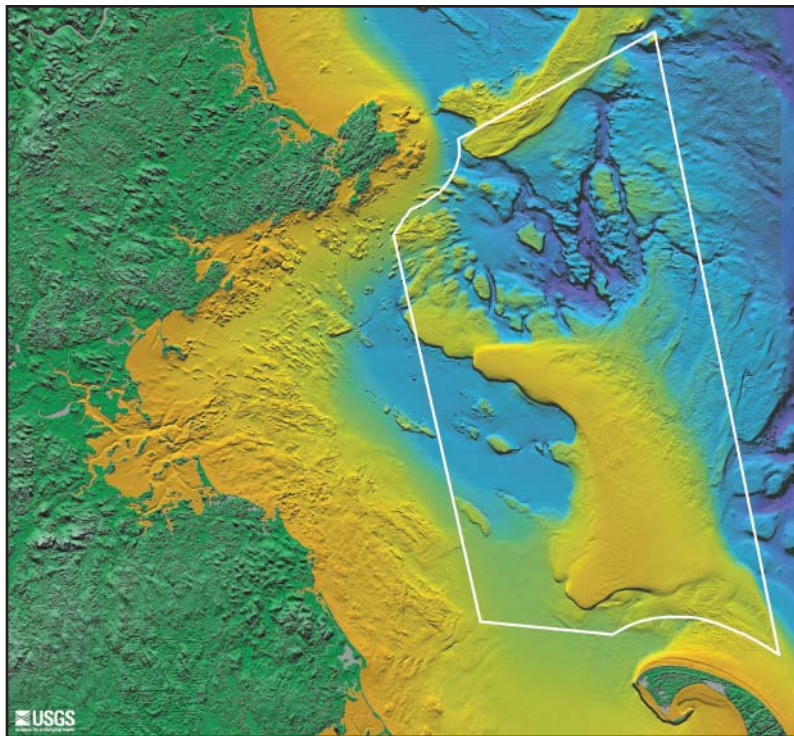
Russ Bowles

Carl Johnson

Duncan Maitland

Bobby Robinson

Meg Tabacsko



Map of Stellwagen Bank National Marine Sanctuary and Massachusetts Bay, with Cape Ann to the northwest of the sanctuary, the northernmost tip of Cape Cod at bottom right of image, and the Boston Harbor Islands at left center side of the map. Image: US Geological Survey

Conference Schedule

LOCATION: McCormack Hall, University of Massachusetts/Boston (classrooms and Ryan Lounge)

- 8:00-8:50** Registration and Coffee -- Ryan Lounge
- 9:00-10:15** Workshop 1 -- (see workshop descriptions for locations)
- 10:30-11:15** General Session - Keynote Presentation -- Dr. David Wiley
Ryan Lounge
- 11:30-12:45** Workshop 2 -- (see workshop descriptions for locations)
- 12:45-1:00** Pick up Box Lunches -- Pavilion at *R/V Columbia Point* dock (eat on water shuttle or save for whale watch trip)
- 1:00 departure** Water Shuttle on UMass's *R/V Columbia Point* to the Whale Watch Vessel -- UMass Pier
- 2:00-5:00** Whale Watch in Stellwagen Bank National Marine Sanctuary (Alternate site based on weather: Boston Harbor Islands Tour)
- 5:00-5:30** Water Shuttle on *R/V Columbia Point* back to UMass

Keynote Presentation

DR. DAVID WILEY, Research Coordinator
Stellwagen Bank National Marine Sanctuary

Until recently, field research on marine mammals in New England relied primarily on surface sightings. Ocean waters obscured the animals' underwater movements, making studies of feeding and social behaviors difficult to ascertain. Traditional tags required piercing the whales' skin and blubber for attachment. The advent of non-invasive, suction-cup-attachment digital sensor packages has revolutionized whale behavior studies and is now making the ocean transparent for scientists.

Dr. David Wiley has been a major contributor to marine mammal research and conservation in New England for decades. In 2001 he joined the staff of Stellwagen Bank National Marine Sanctuary as research coordinator and began an aggressive whale research program that has provided scientific data to support significant marine policy and management changes to support whale protection. His recent work using the temporary non-invasive tags on humpback and right whales has given researchers a wealth of new insights into marine mammal behavior.

Workshops

BIOLOGICAL SCIENCES

Attack of the Moon Jellies **Workshop 1** **Room M-2-417**

In Nature's system of predators and prey, brine shrimp meet their deaths from floating moon jellies. Come explore the relationship between these two animals of the sea while connecting to the Massachusetts State Science Frameworks. We will use our four senses to explore the world of brine shrimp and moon jellies -- sorry no eating at this workshop. We have lots of hands-on activities and experiments for participants to bring back to the classroom. Come and learn something new!

Presented by: Joel Rubin, Stoughton High School and Stephanie Selznick, Boston Public Schools

Fashion a Fish; Invent an Invertebrate **Workshop 1** **Room M-2-419**

Form and function go hand-in-hand. Species are adapted to their specific niches of the environment, evidenced in their body shape, mouth structure, camouflaging coloration, and appendages, for example. In this workshop we will explore the characteristics of fishes and invertebrates of the sanctuary and then design imaginary species that might be suitable residents in specific sanctuary habitats. We'll check to see what real-life species resemble our own creations.

Presented by Anne Smrcina, Education Coordinator, Stellwagen Bank National Marine Sanctuary

Do the Right Thing: Learning About and Protecting Right Whales in our Waters **Workshop 2** **Room M-2-417**

Right whales are one of the most endangered species on our planet. There are only an estimated 350-400 animals in the North Atlantic population. In this workshop we will look at some of the characteristics of whales, how these mammals are similar to humans and how they are different. We will look at adaptations that allow them to feed on tiny copepods and protect themselves from freezing in cold waters. We will look at the major threats to these fascinating animals, and review some of the conservation methods now in place. How to build an inflatable right whale for your school will be discussed, and, if space allows, a life-sized inflatable right whale model will be displayed.

Presented by Regina Asmutis-Silvia, Senior Biologist, Whale and Dolphin Conservation Society

Field Trip Exhibits and Hands-On Activities

GPS: How to use this hand-held technological marvel

GPS or Geographic Positioning System technologies are invading our lives. New, small hand-held models can become useful tools for field trips, research projects and extracurricular activities like scavenger hunts. Learn how to use a simple GPS unit for data collection. Talk to sanctuary whale researchers who use GPS data in their field studies.

The Educational Whale Watch: Activities to make your whale watch trip an exciting learning experience for your students

A whale watch trip to the Stellwagen Bank sanctuary can be much more than a day away from the classroom. Use this field experience to practice data collection. Bring the information back to class for analysis, mapping and graphing exercises. In addition to whales, students can record information about human uses, birds, marine debris and weather.

Gyotaku: Experience the art of fish printing

During down-time during the trip, try your hand at the ancient art of fish printing or "gyotaku." This project can be accomplished with real fish or plastic (non-odorous) substitutes (our choice for this trip). Learn about fish anatomy through art.

Go to GoMOOS for Hourly Ocean Data

The Gulf of Maine Ocean Observing System has buoys throughout the gulf, including one in the sanctuary. Use on-line hourly updates and years of archived data to study oceanographic and meteorological conditions.

Sanctuary On-Line Resources for Marine Science Case Studies

Many marine textbooks offer case studies, but often those examples are from far distant shores. See how sanctuary data can be used to supplement your texts.

Monitoring the Quality of Our Water

Water quality monitoring is happening throughout Massachusetts Bay. Learn about ways to bring water chemistry into your classroom safely and painlessly. Test for pH, turbidity, salinity and other factors. Find out how MWRA uses this data.

2007/2008 Marine Art Contest for K-12 Students

Pick up information about this year's contest and view winners from past years.

ROVs in the Sanctuary/ROVs in the Classroom:

ROVs, remotely operated vehicles, are important research and monitoring tools for the sanctuary. Find information here about annual regional and international competitions for student ROV builders.

NOAA's 200th Anniversary Activity Book

This year marks the 200th anniversary of the founding of the U.S. Coast Survey, one part of NOAA. Review a wide range of activities in "Discover Your World with NOAA: An Activity Book."

Sanctuary Images



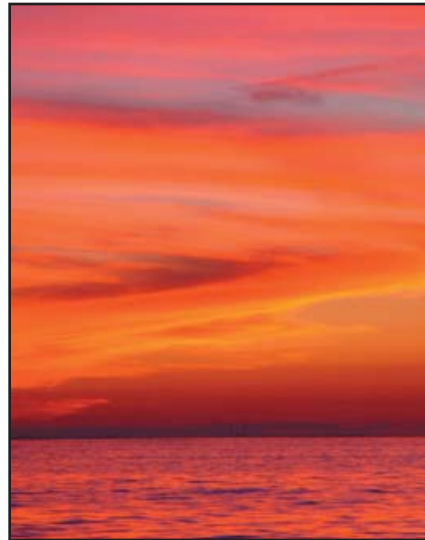
Northern Red Anemone and American Lobster.
Photo by: USGS



Northern Right Whale. Photo by: David Wiley,
SBNMS



Wolffish. Photo by: Peter Auster and Paul
Donaldson, NURC-UConn



Returning home, sunset over Massachusetts.
Photo by: Anne Smrcina, SBNMS

Workshops

PHYSICAL OCEANOGRAPHY

Ocean Investigation: Oxygen in the Water Workshop 1 Room M-2-428
Fish and other aquatic animals need a minimum level of dissolved oxygen (D.O.) to survive. D.O. is measured in parts per million (ppm). Any reading of 6 parts of oxygen per million parts of water is considered healthful for most fish. What is the Dissolved Oxygen level of Boston Harbor? Come find out for yourself. Workshop participants will perform a dissolved oxygen test and find out how healthy the harbor is. You will learn some of the factors that affect the amount of oxygen in a body of water, such as the positive impact the Deer Island Treatment Facility has had on Boston Harbor. All workshop participants will receive the MWRA's Water Quality Manual and learn how to set up a field-based water quality testing program.

Presented by: Meg Tabacsko, Manager-MWRA School Education Program

Sound in the Sanctuary: An Ocean of Noise Workshop 2 Room M-2-428
People and marine animals use sound in the sea to accomplish many tasks. Sometimes those tasks may cause conflicts, especially when man-made sounds such as ship noises mask natural sounds, such as whale communications. We will explore the world of sound in the sanctuary, based on recent studies of the acoustic environment, and look at ways humans are now using sound to protect endangered animals. We will use examples from "Discovery of Sound in the Sea," a CD from the University of Rhode Island, Office of Marine Programs.

Presented by Dr. David Wiley, Research Coordinator, Stellwagen Bank National Marine Sanctuary and Dr. Leila Hatch, Ocean Acoustics Specialist, Stellwagen Bank National Marine Sanctuary

Boat in the sanctuary. Photo by: Peter Auster, NURC-UConn



Workshops

GEOLOGY, GEOGRAPHY, GIS and POLICY

Mapping the Depths: Yesterday & Today Workshop 2 Room M-2-423
Seafloor mapping has changed considerably over the years. Lt. Henry Stellwagen, a U.S. Navy officer on loan to the Coast Survey, mapped the entirety of the bank that now bears his name with a weighted line, taking numerous “soundings” as his ship plied the waters of Massachusetts Bay. From these readings, cartographers were able to draw contour maps of the seafloor’s topography. Today, researchers use side scan sonar and multibeam acoustic systems to develop images of the ocean floor that resemble aerial photographs. We will discuss changes in mapping techniques and take part in a hands-on activity to better understand contour maps while building a 3-D model of the sanctuary region.

Presented by Jack Crowley, Master Teacher, MME Executive Director, and ECHO Project Consultant

Decisions, Decisions, Decisions! Using Science Data for Management **Workshop 1 Room M-2-423**

Ships present a major danger to whales. Collisions between the two often lead to the death of the animal or significant injury. In studies of the sanctuary, researchers determined that the areas with the highest historic concentrations of whales coincided with the Boston shipping lanes. In an effort to reduce the potential for ship strikes, sanctuary staff proposed moving the shipping lanes based on the best scientific information. That change was officially accepted by the International Maritime Organization, and went into effect on July 1, 2007. We will look at how GIS (Geographic Information System) data were used in this conservation effort, and demonstrate how this case study can be used in a class decision-making activity.

Presented by David Wiley, Research Coordinator, Stellwagen Bank National Marine Sanctuary and Michael Thompson, GIS Analyst, Stellwagen Bank National Marine Sanctuary



*Juvenile cod explores a section of gravel sea floor in Stellwagen Bank National Marine Sanctuary.
Credit: NURC-UConn*

Workshops

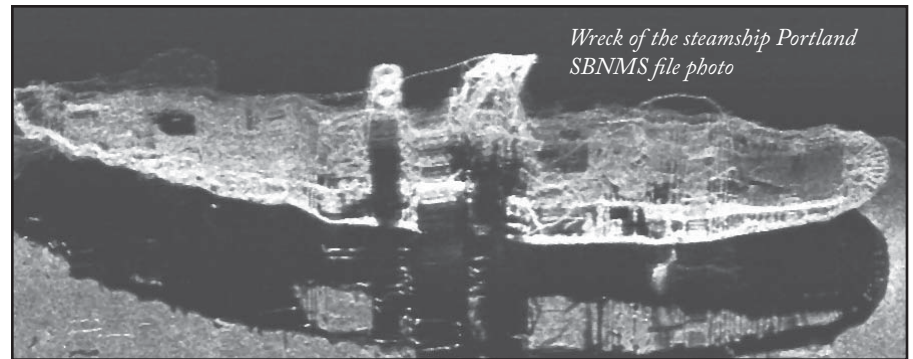
LANGUAGE ARTS, ART AND MARITIME HISTORY

Be a Shipwreck Detective! Workshop 2 Ryan Lounge
Shipwrecks are an important part of our nautical heritage. They provide a glimpse of our maritime heritage at specific points in time, serving as virtual time capsules on the seafloor. Some of our nation’s most interesting shipwrecks are found in NOAA’s National Marine Sanctuaries, including the remains of the Civil War ironclad U.S.S. Monitor off the North Carolina coast and the wreck of the passenger steamship Portland in Stellwagen Bank National Marine Sanctuary. NOAA’s underwater archaeologists have been studying this wreck every year since 2001, when its coordinates were confirmed to learn more about what happened to cause the ship to sink. Now it’s your turn to be a Wreck Detective!

Presented by Bob Rocha, Community Science Programs Manager, New Bedford Whaling Museum

Pictures in Words: Poetry of the Ocean Workshop 2 Room M-2-419
A picture may be worth a thousand words, but a few carefully chosen words can build a memorable image in the mind. In this workshop we will explore various ways to use sanctuary resources for language arts explorations. We will read several poems, look at various types of poetry that provide ideal formats for describing nature, and creatively use our skills to write our own poems using sanctuary images as inspiration. We will also explore other language arts possibilities, including newswriting, personal journals, and children’s books.

Presented by Kathleen Jespersen, Falmouth Public Schools and Anne Smrcina, Education Coordinator, Stellwagen Bank National Marine Sanctuary



*Wreck of the steamship Portland
SBNMS file photo*