

Partnership

Spring 2013 Issue: Volume 23, No. 1

Letter from the Chair

- Suzanne Avtges, Mashpee High School, WHSTEP Co-Chair

Welcome to the Next Generation! With the Common Core State Standards (CCSS) moving forward and PARCC (Partnership for Assessment of Readiness for College and Careers) right around the corner for English/Language Arts and Math, Science is finally getting its moment in the spotlight with the Next Generation Science Standards (NGSS).

The NGSS highlights career and college readiness for STEM related careers. Based on the National Academy of Sciences *Framework for K-12 Science Education*, the NGSS has a broad coverage of science in three dimensions:

1. Science and Engineering Practices
2. Crosscutting Concepts
3. Disciplinary Core Ideas
 - a. Physical Sciences
 - b. Life Sciences
 - c. Earth and Space Sciences
 - d. Engineering, Technology and Applications in Science

This hands-on, integrated approach aims to promote science literacy for all grade spans, with emphasis on supporting science education at earlier grades in order to gain the interest of students. The intent is to ensure that all students K-12 have equitable access to STEM education that is integrated into their total education path. It is widely recognized that STEM related careers are needed now more than ever in order to solve our vastly growing world problems, especially in the field of engineering.



**Join us for the
WHSTEP Annual Meeting**
"Plastics at SEA" science and outreach
Sea Education Association, May 8

The hope is that we reach our students early with real-world and practical experiences, developing problem-solving skills, utilizing technology and engineering opportunities to empower students to apply their knowledge in to their everyday lives! Before you get overwhelmed – take a breath and remember ...WHSTEP is here for you.

The NGSS initiative strengthens your relationship with WHSTEP. Our partnership was creating during the era of the first round of national science standards with Project 2061 and the state-led Project PALMS (Partnerships Advancing Learning in Math and Science). Through WHSTEP, educators have access to professional development in order to stay current in content, and develop relationships with our science and business partners.

Join us at the upcoming [WHSTEP Annual Meeting](#) or check out our newly designed website for ideas on how WHSTEP can support you. Together we can embrace the Next Generation Science Standards.

WHSTEP 2012 Highlights

In January, the **MBL Bell Center for Regenerative Biology** hosted the WHSTEP General Meeting. Dr. Joel Smith and colleagues welcomed the WHSTEP community into their lab for a presentation on their research, an introduction to some organisms with regenerative capabilities, and a tour of the facilities.

For 15 years, WHSTEP has organized a **science project mentoring program** at the Lawrence School in Falmouth. Members of the WHSTEP scientific community volunteer their time to meet with 7th and 8th grade students and help them design and refine their science projects. This year, mentoring took place in early February. Twenty-seven volunteers participated from MBL, WHOI, USGS, SEA and WBNERR.

WHSTEP arranged for **science institution exhibits** at the Falmouth District Science Fair in early March. Students and families enjoyed the informative and interactive displays from all of the WHSTEP member institutions. The Bourne Science Fair was held in mid-March at Bourne Middle School. WHOI, USGS, MBL, C-MORE and the Encyclopedia of Life exhibited at the Fair.

In April, WHSTEP hosted a **Family Science Outing**, "Inside the *Alvin* Submersible" at the WHOI Redfield Laboratory and Ocean Science Exhibit Center. Lead *Alvin* pilot Bruce Strickrott described the history of the submersible and future upgrades, and Dr. Lara Gulmann told about doing science on the seafloor. After the talks, families enjoyed *Alvin*-themed exhibits and activities at the Exhibit Center.

In May, the **WHSTEP Annual Meeting** was held at Waquoit Bay Reserve. Catherine Cramer of COSEE New England and TEDxWoods Hole introduced high-quality ocean science web resources for the classroom. WHSTEP mini-grant awardee Syrel Dawson, Mullen-Hall teacher, described the Shiverick's Pond nature study project and showed field notebooks from her 4th-grade students.

Sea Education Association (SEA) held an Open Ship in conjunction with WHSTEP as a **Family Science Outing** in June. Undergraduate students and SEA faculty just back from a cruise led tours of the *Corwith Cramer* and described their research at sea. Nearly 200 people attended the event.

In mid-October, the annual WHSTEP **Liaison Welcome Dinner** was held at the Landfall Restaurant in Woods Hole with over 40 attendees. Outreach and education staff from the scientific institutions and local informal science programs presented classroom-ready activities and demonstrations. School and institution liaisons, elementary, middle and high school teachers, school administrators and scientists enjoyed an evening of networking and planning.

In November, WHSTEP sponsored at **Science Safari at the National Marine Life Center** in Buzzards Bay. Center director Kathy Zagzebski described the rehabilitation of marine mammals and turtles at the facility, as well as resources and field trip opportunities for schools. The safari included a behind-the-scenes tour of the animal hospital to meet two harbor seal patients.

On-going projects:

- Through our liaison network, WHSTEP links teachers with researchers and materials from the member scientific institutions, and links researchers with schools to fulfill their outreach goals.
- WHSTEP awards mini-grants to support and enhance science, math and technology education in our member schools.
- "Partnership," the WHSTEP newsletter, is published biannually and distributed to a mailing list of over 400 people.
- WHSTEP administers an email listserv to publicize our programming and meetings, as well as relevant local workshops and lectures on topics of science, math and technology.

WHSTEP Liaison Welcome Dinner

- Kama Thieler

On October 24, 2012, the annual WHSTEP Liaison Welcome Dinner was held at the Landfall Restaurant in Woods Hole with over 40 attendees. Outreach and education staff from the scientific institutions and local informal science programs presented classroom-ready activities and demonstrations. School and institution liaisons, elementary, middle and high school teachers, school administrators and scientists enjoyed an evening of networking and planning.

Rene Boiteau and Nick Hawco, MIT/WHOI joint program, recruited a few participants to take a plankton sample from the water beneath the Landfall deck. They then showed the sample under a microscope and displayed materials from the C-MORE Plankton hands-on science kit. Genevieve Davis and Grace Simpkins of the Protected Species Branch (PSB) at the Northeast Fisheries Science Center (NEFSC) exhibited a program of core educational materials relating to marine mammal topics and the research done at NEFSC. Luk Hendrik and Shawn Dinsmore of Aecern exhibited discovery-driven mobile learning software products. Margo Connolly of the Buzzards Bay Coalition displayed information on their Education programs. Kama Thieler, WHOI, presented a coastal water sampling program, part of the Global Learning and Observations to Benefit the Environment (GLOBE) Program.

WHSTEP would like to thank Don Estes, owner of the Landfall Restaurant and member of the WHSTEP Executive Committee, who donated use of the restaurant for the event, and the scientific institutions that provided literature, maps and other educational materials for the teachers, as well as raffle prizes.

Visit the WHSTEP website at:
<http://www.who.edu/whstep/>

For announcements about events related to science and math, subscribe to the WHSTEP listserver at:
<http://lists.mbl.edu/mailman/listinfo/whstep>



Kama Thieler

Mark Wilson, Director of Curriculum and Instruction for Falmouth Public Schools, looks at a plankton sample as Nick Hawco, MIT/WHOI graduate student, explains the hands-on science kits from the Center for Microbial Oceanography available to teachers through WHOI.

Liaison Dinner presenters and web resources:

Hands-On Science Kits from the Center for Microbial Oceanography – Research and Education

http://cmore.soest.hawaii.edu/education/teachers/science_kits.htm

WHOI GLOBE Partnership: Students, Teachers and Scientists Investigating Coastal Ecosystems

www.globe.gov

Buzzards Bay Coalition Education Programs

<http://www.savebuzzardsbay.org/DiscoverBay/ExploreWithUs/SchoolsGroups>

Aecern – Mobile Platforms for STEM Education

www.aecern.com

NOAA Outreach and Education on Protected Species

<http://www.nefsc.noaa.gov/psb/NOEPS/>

WHSTEP Science Safari: National Marine Life Center

- Kama Thieler

The National Marine Life Center in Buzzards Bay hosted teachers (and a few lucky students) for a science safari on November 28, 2012. Kathy Zagzebski, President and Executive Director of the Center, welcomed the attendees and presented a talk about their work, “Doctoring Dolphins, Tending Turtles and Studying Seals”.



Kama Thieler

NMLC Director Kathy Zagzebski describes their work with seals, dolphins and turtles.

After the talk, Kathy introduced an activity to show participants how turtles and marine mammals are examined before they are admitted to the animal hospital. Safari participants weighed, measured and recorded the “vital signs” of plush dolphins and seals, and plastic turtles.

The safari concluded with a behind-the-scenes tour of the hospital facilities – including incubators to warm cold-stunned sea turtles and the food preparation area. The group met “Townsend”, a juvenile male harbor seal who was recovering from surgery for a middle ear infection. Another harbor seal swam in large tank nearby – a female who was found with severe wounds on her muzzle. [Note – this seal was successfully released in January.]

Kathy welcomes school groups and states, “Anything you teach, I can make it about marine mammals.” Their programming is adaptable to curriculum standards on adaptations, species



Kama Thieler

Safari attendees take a look behind the scenes at the animal hospital.

classification, food webs, measurement and data analysis, and more.

WHSTEP would like to thank Kathy and her staff for a wonderful program – and for their dedication to treating animals and educating students and the public. Take a look at their website, which includes a webcam in the seal tank.

<http://nmlc.org/rehabilitation/web-cam/>



Kama Thieler

Bournedale Elementary teachers Theresa Gratis and Maureen Fuller measure a model sea turtle as they learn how patients are admitted to the animal hospital.

WHSTEP Mini-Grant Update: Mullen-Hall School Garden

- Julie Mirocha, Mullen-Hall Garden Committee

The new bird and butterfly garden at Mullen-Hall School was funded by a WHSTEP grant as part of the first annual "Helping Hands Day" on May 18, 2012. This is a yearly service learning opportunity that gives all the children at Mullen-Hall a chance to help their community. On this day, a team of twenty-four 1st and 3rd graders and accompanying adult volunteers showed up behind Mullen-Hall School to put the first plantings of the new school garden in the ground.

Preparations began weeks earlier with engineering and observation activities performed by first grade students. The idea was for the students to decide what kind of plants would do best in the proposed the garden site, and to design the garden based on their findings. They would also be developing a planting tool as well as preparing the area for planting day. There were six activities in total, guided by the classroom teachers.



MH Garden Committee

May 18 was a beautiful sunny day and the students were excited to get to work. The first graders worked with their third grade buddies in teams of two. It took less than 2 hours for 300 plants to be planted, mulched and watered. The plantings were then cared for and watered over the summer by Mullen-Hall families. When the students returned to school in September of 2012, they found a blooming garden waiting for them.



MH Garden Committee

The bird and butterfly habitat garden continues to be the backbone of the Mullen-Hall school garden. Students of all grade levels use the area as a starting point for observation and exploration in the garden. This fall there were already monarch caterpillars and butterflies to be found there, as well as many birds and insects. Second grade classes were able to release their classroom-hatched butterflies into the bird and butterfly garden that they designed. There are more enrichment and curriculum pieces being planned for this area of the garden this Spring and we look forward to many more seasons of growth and learning. We are grateful to WHSTEP for getting us started and making our garden a reality.

WHSTEP Mini-Grant Program

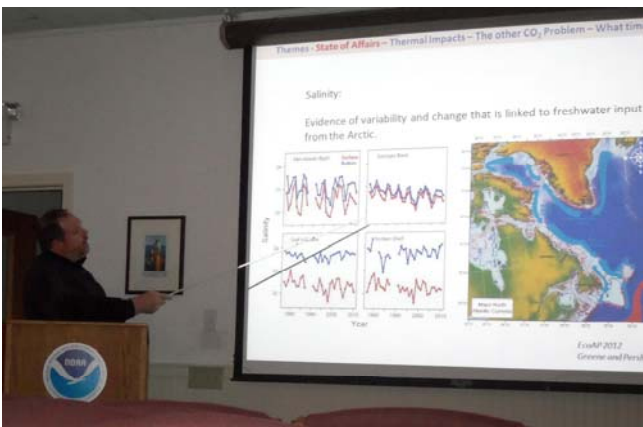
The mini-grant program provides small (up to \$500) grants to teachers in the member schools and their partners to develop projects that will improve or enhance science, technology, engineering and math education for their students. They are intended to create opportunities not ordinarily funded by the schools.

Visit the [WHSTEP website](#) for more information, and a copy of the grant application.

WHSTEP 2013 General Meeting: NOAA Fisheries

- Kama Thieler

WHSTEP's General Meeting was held on January 24, 2013 at the Woods Hole Science Aquarium and teachers and community members enjoyed learning about the research and outreach work of NOAA and National Marine Fisheries Service groups based in Woods Hole. Laboratory Director Russ Brown welcomed the group and George Liles, aquarium director, shared details about school visits and internships at the aquarium. Genevieve Davis of the Protected Species Branch discussed a new program of hands-on activities, presentations, and projects on marine mammals that she and her colleagues will present in K-5 classrooms.



Kama Thieler

Sean Lucey describes how water temperature and salinity are changing in the North Atlantic.

Sean Lucey presented the first science talk on how climate change and variability are reshaping the Northeast Shelf ecosystem. He showed that sea surface temperatures are warming and reached record highs in 2012. This affects the distribution of species and causes changes in the phenology or timing of events such as the spring phytoplankton bloom.

Dvora Hart gave the second talk on sea scallop fishery management and development of new survey techniques for scallops and the seafloor. She presented the management success story of the scallop fishery such that it is currently the most valuable fishery in the U.S. She also described the evolution of scallop survey methods over time, and



Kama Thieler

Lawrence School teachers Bob Heller and Bob Laquidara (foreground) and Dvora Hart, NOAA, and JC Weber, MBL, look at 3D HabCam images.

how the Habitat Mapping camera (HabCam) is now used to count scallops and survey benthic habitat.

After the talks, attendees donned 3D glasses to take a look at some of the beautiful images from the HabCam. All agreed that it was an informative and engaging event.

For more information:

More information about [scallops and HabCam](#)

More about [species distribution and climate change](#)

NOAA Outreach and Education on Protected Species (NOEPS):

<http://www.nefsc.noaa.gov/psb/NOEPS/>

Woods Hole Science Aquarium:

<http://aquarium.nefsc.noaa.gov/>



Kama Thieler

3D images from the Habitat Mapping Camera.

Science Community Lends Support to Local Science Fairs

- Kama Thieler

Science Fair season is a busy time of year for teachers, students, and the local science community. Many local institutions contribute mentors, judges, prize donations, and exhibits to science fair efforts.

For 15 years, WHSTEP has organized a science project mentoring program at the Lawrence Junior High School in Falmouth. Members of the WHSTEP scientific community volunteer to meet with 7th and 8th grade students and help them design and refine their science projects. This year, mentoring took place during the first week of February (and ended abruptly as a blizzard approached during the Friday session!)

WHSTEP thanks the following volunteers for taking their time to help the students at the Lawrence School: **J.C. Weber, Sam Kelsey, Suzanne Thomas, Mary Anne Alliegro, David Graham, Kate Morkeski, Pam Lescault, Steven Senft and Liese Siemann** (MBL); **Chris Sherwood, Brian Buczkowski and Fran Lightsom** (USGS), **Vicke Starczak, Gauher Shaheen, Karen Chan, Peter Andeer, Besty Gladfelter, Monica Rouco-Molina and Maria Pachiadaki** (WHOI); **Joan Muller and James Rassman** (WBNERR); **Jim Newman and Deb Coulombe** (Falmouth VIPS); **Amy Siuda** (SEA); **Kama Thieler, Molly Cornell, Sara Bysshe and Lynn Parks** (WHSTEP).

WHSTEP arranged for institution exhibits at the Falmouth District Science Fair on March 2. Hands-on displays were presented by Woods Hole Oceanographic Institution and Sea Education Association; Marine Biological Laboratory brought horseshoe crabs, sea urchins and other organisms from the Marine Resources Center; Waquoit Bay National Estuarine Research Reserve brought a hands-on exhibit of their research and education programs, USGS Coastal and Marine Science Center exhibited maps and 3D images.



JC Weber

Suzanne Thomas, MBL Ecosystems Center, talks with a Lawrence School student about his project at the District Science Fair on March 2.

The WOODS HOLE SCIENCE AND TECHNOLOGY EDUCATION PARTNERSHIP (WHSTEP), established in 1989, is a partnership of schools, scientific institutions, businesses, and community resources. Its purpose is to support, promote, and expand science, math, and technology education and science literacy in the participating communities.

How to get involved:

- ✓ Attend a Partnership meeting in January or May, or a Science and Math Safari
- ✓ Contact an Executive Committee member or a liaison with program ideas or feedback
- ✓ Host a teacher tour or class field trip in your lab
- ✓ Volunteer to present your research at a WHSTEP event
- ✓ Serve as a mentor for a student science fair project
- ✓ Make a financial contribution to support WHSTEP programs and grants for teachers

Contact:

General information whstep-info@whoi.edu

Website <http://www.whoi.edu/whstep/>