

A Day at the Beach is for Learning

Workshop gives teachers the tools to use a 'real environment' for lessons aligned with new science standards

By JUDY BENSON

When the science lesson involves literally turning over rocks, wading waist-deep in Long Island Sound, shaking knee-high tumblers of sand and grabbing a flapping bluefish out of a net, students can get excited – even if those students are themselves veteran science educators.

“Holy moly,” cried Sara Sandora, science curriculum leader for Madison public schools, as she flipped over a slippery kelp-colored rock to find a dozen or so Asian shore crabs scurrying underneath.

Sandora, one of 10 teachers who spent a summery day in September at a workshop at Hammonasset Beach State Park in Madison, blurted her exclamation during one of the first exercises of the session. But there would be many more such expressions to come.

“Look at all us grown-ups getting so captivated,” said Donna DuBaldo, one of the workshop leaders, as six or seven of the teachers kneeled in the sand to pick small finfish and hermit crabs out of a seine net. “Think of how 8-year-olds and 9-year-olds are going to react.” The daylong program, run by Connecticut Sea Grant for 15 years and sponsored by the EPA Long Island Sound Study, has taught scores of teachers how to use Hammonasset’s varied habitats – from salt marsh to rocky intertidal to sandy beach to dune – as an outdoor science classroom. Called the Long Island Sound Mentor Teacher (LISMT) program, its purpose has been to show teachers how to incorporate Long Island Sound into their classrooms. But this time, the program took on new relevance.

Now, the workshop is presenting hands-on activities and cross-disciplinary concepts directly aligned with the Next Generation Science Standards, a national curriculum adopted thus far in 18 states. In 2015, Connecticut became one of those states, when the state Board of Education set a five-year timeline for implementation.

Diana Payne, education coordinator for Connecticut Sea Grant and organizer of the workshop, said the new standards are a major improvement in the way science has been taught.

“We’re finally going to do science in the classroom the way science is actually practiced,” she told the teachers. The standards, developed in response to concerns about a shortage of U.S. workers with science and engineering skills, emphasize hands-on problem solving and learning through investigation rather than lectures. The three subject areas – physical science, life science, and earth and space science – are taught through a “three-dimensional” approach in which students apply science and engineering practices, learn the core ideas of each discipline and discover cross-cutting concepts that link them together. The standards don’t proscribe particular textbooks, curriculum or lessons, though, leaving states and schools free to develop those independently. That’s where the LISMT workshop comes in.

Donna Rand, workshop co-leader and science specialist at Glastonbury-East Hartford Magnet Elementary School, let the teachers know they could expect to get their feet wet and their hands dirty.

“We’re going to apply science to a real environment,” she told the teachers, seated on picnic tables at a pavilion, as beachgoers toting towels and folding chairs filed past on their way to a spot near the water. “We’re going to give you all the equipment you need to bring your kids here – the seine nets, resource guides, minnow traps.” She and DuBaldo had written a section in Sea Grant’s Long Island Sound Curricular Resource Guide about using Hammonasset as a class field site that the teachers would be taking home with them that day.

When bringing a class to the beach, she and DuBaldo said, teachers should realize that they will probably have students who’ve never been there before, and start with the basics. They passed out some large roadmaps.

“We usually start off asking the kids, ‘where in the world is Long Island Sound?’” Rand said.

Locating the Sound and Hammonasset led to a demonstration about the Sound’s watershed that extends to the entire state. Then Rand and DuBaldo took the group on a short hike to an intertidal area for a lesson about invasive species and data collection that enlisted the services of the Asian shore crabs hiding under nearly every rock. It was the first of four activity stations at different locations at the park, a logistical challenge teachers used to working in traditional walled classrooms have to prepare for.

“You cannot do this alone,” DuBaldo said, as teachers sat along a driftwood log awaiting instructions for their next

station. “You need to get other teachers and parents involved at various stations.”

Paying attention to the tides is also key to success, Rand said.

“You really want to bring your class here at low tide,” she said.

After stopping at an overlook where the rubble of a glacial moraine shares the shoreline with large boulders, the group broke for lunch and prepared for an afternoon in the water. As sunbathers and swimmers enjoyed 76-degree water and 84-degree air temperatures, the teachers donned waders and learned how to drag seine nets. Their haul included small fish called silversides and the bluefish pursuing them, along with ctenophores (also called comb jellies), small shrimp, hermit crabs and several kinds of seaweed. Much of the catch was transferred into buckets and hauled back for closer examination with magnifiers, a microscope and identification guides set up on a makeshift picnic table lab.

“Identifying is good, but concepts are better,” DuBaldo told the teachers, suggesting how they should use the live specimens with their students. “Ask the students to think about whether these fish like light or dark. Ask them to think about how they move.”

Peg Van Patten, recently retired communications director for Connecticut Sea Grant and author of its 2006 book about seaweed, next gave a lesson about the different kinds, their use in foods and other products, and demonstrated an arts-and-crafts project of pressing seaweed.

“You can preserve it for the scientific value or for the artistic value,” she said, as the teachers arranged Irish moss, sea lettuce and rock weed on sheets of paper. For the final activity, the teachers headed to the beach for a geology lesson that involved sifting sand, then some time for reflection about using the beach experiences for art, creative writing, music and physical education lessons that would complement the science.

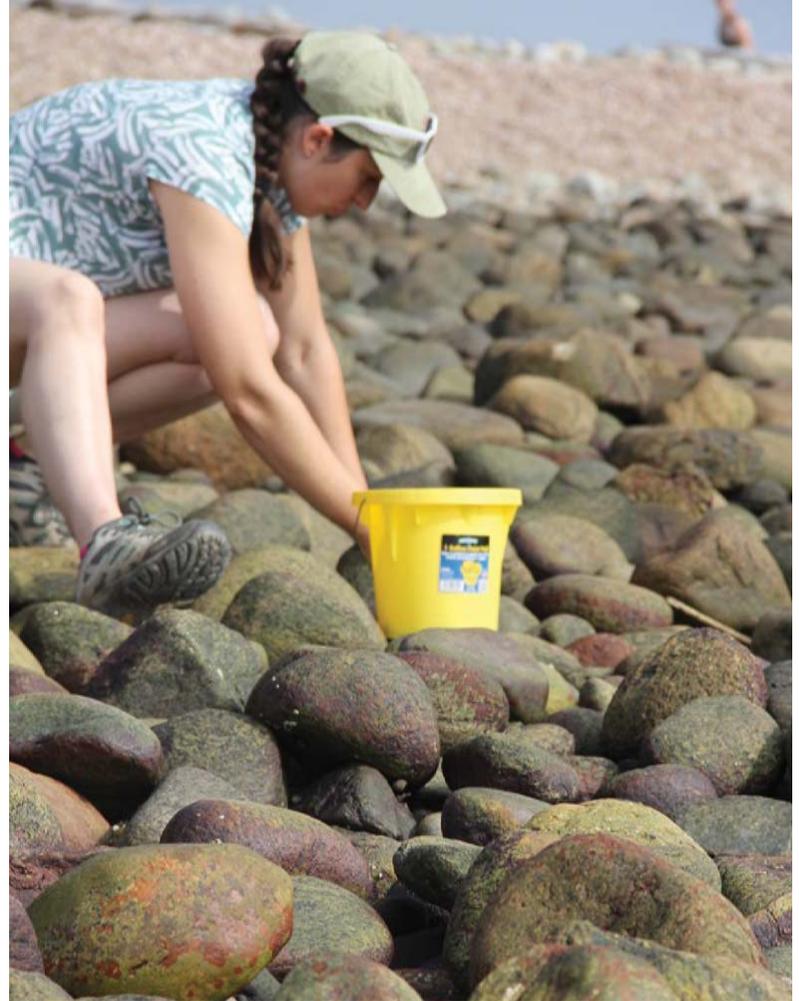


Asian shore crabs, an invasive species, were collected by teachers from a rocky area of the shoreline at Hammonasset Beach State Park. Photo: Judy Benson

“We’ve taught kids how to use the seine net in gym class, using balls,” DuBaldo said.

At the end of the day, teachers were eager to put what they’d learned into action.

“I want to come back



One of the participants in the teacher workshop turns over rocks in search of Asian shore crabs. Photo: Judy Benson

with a group,” said Doreen Abubakar, who works with an environmental education organization in New Haven.

As he filled a canvas bag with Long Island Sound guides, magnifiers, an hydrometer and other materials, Keith Seigny, coach for STEM / engineering at the Annie Fisher STEM Magnet School in Hartford, showed his excitement.

“I’ve got a whole bunch of things I’d love to do,” he said. “This is what the kids need, to be learning science not from a book, but from real life. Now that I’ve got the program, I’ve just got to work on getting a bus.”

Connecticut Sea Grant resources for teachers:

The Long Island Sound Curricular Resource Guide can be downloaded at: <http://seagrant.uconn.edu/2010/03/02/long-island-sound-curricular-resource-guide/>

To request copies of “Seaweeds of Long Island Sound,” by Peg Van Patten, visit: <http://seagrant.uconn.edu/2009/01/01/seaweeds-of-long-island-sound-new-second-edition/>

To request copies of “Salt Marsh Plants of Long Island Sound,” visit: <http://seagrant.uconn.edu/2009/01/01/salt-marsh-plants-of-long-island-sound-2/>

To see a complete list of Connecticut Sea Grant educational guides available for purchase or download, visit: <http://seagrant.uconn.edu/publications/education/>