THE REPORTER

At Suisun Marsh, Solano sixth-graders become student-scientists

Marianne Butler, education director at with the Solano Resource Conservation District, talks to sixth-graders from Mare Island Technology Academy on Wednesday as they participate in hands-on science activities at Rush Ranch Open Space adjacent to the Suisun Marsh. (Chris Riley/The Reporter)

By **RICHARD BAMMER** | rbammer@thereporter.com | Vacaville Reporter
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Within two hours, they became soil scientists, hydrologists and botanists, but none were wearing white lab coats.

They learned the definition of a slough and the effects of climate change on marsh plants. They came to understand what brackish water is and the word “turbidity.” They became familiar with such terms as “ph test” and “phosphate” and tested for them.

Some 50 students, two classes of sixth-graders, from the Mare Island Technology Academy visited Rush Ranch Open Space in Suisun City on Wednesday morning. Dilwara Fletcher, a field educator for Solano Rural Conservation District, told them, “I’ll call you student-scientists.”

Her remark came amid a short walk from the ranch’s Nature Center and down a dirt roadway to soil and water “stations,” where the students, among some 1,200 sixth-graders countywide, are expected to partake of the RCD’s Watershed Education Program through December.

The program — the second of more than dozen scheduled this fall — consists of three in-class lessons led by RCD staff and a field trip to Rush Ranch, off Grizzly Island Road, just south of Suisun City, and to the nearby Suisun Marsh.

Fed from the Sacramento River, other Northern California waterways and from hillside creeks in Solano County, it is considered the largest contiguous brackish water marsh and tidal estuary in the West and feeds into San Francisco Bay, said Shea Kinser, the RCD education program manager.

Essentially an outdoor science lab, the marsh also is home to thousands of migrating birds on the Pacific Flyway, a habitat for more than 40 animal species, some dozen reptile and amphibians and more than 40 different types of fish. The students also learned that the marsh is home to the endangered salt marsh harvest mouse and that certain plants thrive in the marsh area, such as curly dock, and in the outlying grassland area, such as coyote brush.

Organized into six groups of seven students each, the young and budding scientists practiced collecting data at the soil and water stations, which proved to be fertile ground for questions.

Fletcher asked the students if they could tell from a soil’s texture, soft and moist, for example, is they could tell if water was present. As the students sat on a gray tarp stretched out next to the dirt roadway, she worked with Marianne Butler, the RCD education director, who also engaged the students in discussion and posed questions.

Eighty percent of ocean pollution comes from cities, Fletcher told the students. As they all looked out onto an area filled with pickleweed, salt grass and tule, she said plants help prevent erosion. She also asked the students to consider how climate change might affect plant life in the marsh.

“What is climate change?” Fletcher then asked.

“Scientists and you may have noticed that temperatures have gotten a lot hotter” and extended high temperatures affect the marsh, she said.

Amy, a sixth-grader at Mare Island Technology Academy, waits for a butterfly to land on her finger as she and fellow academy students participate Wednesday in hands-on science activities in the Suisun Marsh, part of the Solano RCD's Suisun Marsh Watershed Education Program. (Chris Riley/The Reporter)

Butler noted California in recent past years endured a seven-year drought. What could happen to the marsh? she asked. The answer: "Saltwater intrusion."

Noting that certain marsh animals are rare, if not endangered, she referred to the salt marsh harvest mouse, which lives in the "transition zone" between the grassland area and the marsh. Then she said, "If we lose one animal, another could overtake the area and change the transition zone."

At the water station, further down the roadway, she asked the students, "What do you call a scientist who studies water?" Answer: A hydrologist.

She then asked the students to wear clear plastic goggles, as they were going to use chemicals to test the water's pH, or how acidic/basic the brackish marsh water is. It measures a range from 0 to 14, with 7 being neutral, with a pH less than 7 indicating acidity, whereas a pH greater than 7 indicates a base. (The test is really a measure of the relative amount of free hydrogen and hydroxyl ions are in the water.)

Solano RCD Education Director Marianne Butler (center right in red jacket and seated) prepares to explain and test Suisun Marsh water's pH count to Mare Island Technology Academy students during their field trip Wednesday to Rush Ranch near Suisun City, part of RCD's Suisun Marsh Watershed Education Program. (Reporter photo/Richard Bammer)

Butler also had the student check the water's turbidity, or how cloudy or clear it is, and its temperature.

She also noted that someone washing their car with soap, then having the soapy water flow into a drain, means it will enter a storm drain. Then what happens? she asked. The students seemed to know, that the water would enter the body of water on the Vallejo shoreline, San Pablo Bay, where it, in turn, would enter the greater San Francisco Bay and reach the Pacific Ocean.

At the end of their day, the students were assigned to write and read poetry about their field trip experience.

The RCD Suisun Marsh Watershed Education Program continues this month through December for what Butler said was 30% of the county's sixth-graders — from Vacaville, Vallejo, Dixon, Rio Vista, Benicia and Fairfield — who would discover the vital role the marsh plays in the region's ecosystem while learning science outdoors, enhancing the classroom experience.

The final classroom lesson of the program, which takes place after the field trip, teaches students about the sources of their drinking water and reminds students of the importance of water conservation.

The curriculum for the classroom lessons and field trip meets California's Next Generation Science Standards and engages students in inquiry-based learning, Kinser noted in a press statement.

Shea Kinser, Solano RCD Suisun Marsh Watershed Education program manager. (Reporter photo/Richard Bammer)

"We provide students with the opportunity to see up close the open spaces and water resources they've been studying," she added.

The RCD's Suisun Marsh Watershed Program is free to participating schools. The program is made possible by the Solano County Water Agency; Solano County Department of Resource Management; Vallejo Flood and Wastewater District, Solano County Orderly Growth Committee, Fairfield-Suisun Sewer District, the Vacaville Public Education Foundation, and the Benicia Valero Refinery, in partnership with Suisun Resource Conservation District.

Kinser and Butler both noted that there is room in the program for two more Solano County school groups of sixth-grader. If interested, educators should visit

www.solanorcd.org, email education@solanorcd.org or call Kinser, telephone (817) 675-3604.

The program, Kinser said, teaches students “to be good stewards of our open spaces.”