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Students share findings about water quality

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Staff photo by KATIE FITZPATRICK

Northern High School seniors Nick Gilbert and Peyton Colgan and freshman Shane Colgan play a board game created by environmental science students who participated in the Plankton and Nutrient Studies for the Chesapeake Bay project.



High school students shared their results of a year-long study in which they investigated nutrient enrichment and phytoplankton dynamics in the Chesapeake Bay on Saturday at Huntingtown High School.

The results were presented at the third annual Plankton and Nutrient Studies for the Chesapeake Bay, or PLANS, summit, which was held to provide students with a forum to share their work with other students, teachers, families, scientists and the public.

Dr. Kelly Clark, director of the Morgan State University Estuarine Research Center, said the PLANS program is a curriculum enhancement program, funded by the National Oceanic and Atmospheric Administration B-WET program, designed to introduce Calvert County students to “the wonders and intricacies” of the Chesapeake Bay.

“What it really is, is a partnership” between Morgan State University, the Society for Ocean Sciences and Calvert County Public Schools, Clark said. “But more than a partnership with the administrative core, it’s a partnership with the students, because we ... put the programs together but it’s the students who run the experiments.”

The goal of PLANS, according to an event brochure, is to give students a hands-on experience by investigating nutrient enrichment and limitation, microscopic examination of live plankton and the roles that plankton play in the ecology of estuary. Scientists and research faculty work directly with teachers and students on regionally important environmental issues, the brochure states.

As part of PLANS, Morgan State University Estuarine Research Center scientists Richard Lacouture and Stella Sellner visited ninth-grade, honors and advanced placement environmental science classes and also took the students on field trips. The students compiled all of their work and findings during the classroom visits and field trips, which they shared via poster presentations, student-made board games and PowerPoint and video presentations during Saturday’s summit.

Much of the students’ research came from a boating trip. Lacouture said as part of PLANS, in the fall and the spring, students took a boat onto the Patuxent River where they performed water quality monitoring. Students looked at the temperature, salinity, clarity and dissolved oxygen levels of the water and measured how much plankton is in the water during the boat trips, Lacouture said.

“We give them a really, really accurate simulation of what we do when we’re out on one of our water quality monitoring cruises,” he said.

Lacouture said the field trips and the classroom curriculum teach important concepts of the ecology of the Chesapeake Bay while teaching students to “be better stewards.” He said teachers encourage students not only to tell the “story of science” in their projects, but also to examine what can be done to help improve the water quality themselves.

Calvert High School 11th-grader Meggie Stewart was part of a group that put together a poster board about submerged aquatic vegetation’s gradual decline in coastal basins. The “chief threat” of submerged aquatic vegetation, Stewart said, is the poor water quality in bay.

“The bay is so cloudy that sunlight can’t penetrate through and the grass can’t grow,” Stewart said. “... Mostly, it’s really polluted by runoff.”

Stewart said it is important for people to realize “we are a part of the watershed” and are directly affecting what goes into the water.

“If more people know that they need to cut back on fertilizer and plant more trees to stop erosion, then we can, as a whole, improve the quality of the bay,” she said.

Lacouture said the “hands-on” part of the program, which included the boating field trip, is in danger of not happening again next year due to lack of funding. However, the teachers have the necessary tools and supplies to teach the curriculum again in the classroom, which Lacouture said he hopes will continue.

Stewart, 16, said she is in the AP Environmental Science class that participated in the boating field trip this school year. As part of the trip, Stewart said she and other classmates had three tanks — one which contained no oysters, another which contained “just a few” and a third which was full of oysters.

“We put algae in each one and after a couple of minutes or so we would take a fluorometer reading, and by the end, the tank full of oysters was completely clear,” Stewart said. “That’s just showing how, because we don’t have as many oysters in the bay, how much it affects the water quality. [Oysters] are the natural filter for the bay ... but they’re down to less than 1 percent of the original population. It’s pretty bad.”

Stewart said as part of a project for another class, she wrote a letter to U.S. Sen. Ben Cardin (D) outlining different ways to reintroduce the native oyster or an Asian oyster, which she said “grows three times faster,” because “we just really need a filter in the bay right now.”

One way to help raise awareness about the importance of maintaining good water quality is to hold people accountable, which is just one of many jobs of a riverkeeper, said keynote speaker Fred Tutman, Patuxent Riverkeeper.

“The work of a riverkeeper is not widely understood, because it’s a little different from what I think people of the Chesapeake are accustomed to in terms of a model for advocacy,” Tutman said. “The Patuxent’s a perfect river for grassroots advocacy, because it’s grassroots advocacy that has always been the most successful in making gains for water quality.”

Tutman said “the grassroots push” from the Southern Maryland counties began about 40 years ago for better enforcement of the Clean Water Act. He said the push was responsible for making the Patuxent River “just about the only river in the Chesapeake Bay spectrum that’s ever been substantially brought back to health, only to be subsumed again” by growth factors, 36 wastewater treatment plants, negligence and indifference.

What is currently “wrecking the Patuxent” is the “broad, diffused sources,” such as runoff from parking lots and housing developments, rather than pipe discharges, Tutman said.

“The work of a riverkeeper is really a community advocate,” he said. “... Being a riverkeeper isn’t like being a river sheriff. We have no more tools than the rest of you have. We are citizen advocates who are engaged in order to hold the government’s feet to the fire, to hold each other’s feet to the fire.”

Tutman said riverkeepers are also tasked with confronting polluters and holding them accountable, being the eyes, ears and voice of the river, monitoring and investigating, lobbying for better laws and demanding vigilant enforcement. Riverkeepers also conduct outreach and educational events, he said.

Former delegate Sue Kullen read a letter written by former state senator Bernie Fowler, who could not attend Saturday’s summit.

Fowler wrote that he could “recall vividly how productive and good the Patuxent River was” to people during the Great Depression, a “critical time in history when hunger and want were ever present for many people” in the country. Fowler, in the letter, wrote that he had a “deep and abiding affection” for the river, which, during the 1950s, measured a water clarity of 12 feet below the surface. “Sadly,” in 2012, the Chesapeake Bay was given a water quality grade of an “F,” Fowler wrote.

“Presently, the news is discouraging, but this is not an acceptable excuse for our lack of effort,” Kullen read from Fowler’s letter. “Drastic and immediate action is vital and absolutely necessary to avoid the death of one of the greatest estuaries in the world. Please join me in refusing to forfeit your determination, hope and optimism to restore our bay.”

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