OCEAN ACIDIFICATION STUDIES IN MIDCOAST MAINE

Did you know that Earth's oceans are becoming more acidic? Students at Blue Hill Consolidated School in Blue Hill, Maine have been exploring this topic with their science teacher, Nell Herrmann. Ms. Herrmann became particularly interested in ocean acidification (OA) when she had the opportunity to travel to Palmer Station Antarctica in 2012 as part of an NSF-funded professional development program for teachers called PolarTREC. The experience left a lasting impression on Ms. Herrmann, who continues to feel compelled to share her knowledge about OA with kids.

To learn about the topic, students were given small coral fragments and asked to conduct a simple experiment demonstrating how acidic solutions affect marine organisms whose tissues contain calcium carbonate. Those animals, such as mollusks, corals, coralline algae, and pteropods, are most vulnerable to OA. Students found the initial mass of their coral fragments, then soaked them in a vinegar solution and measured the change in mass each day. The results were dramatic and, on average, students determined that the coral fragments lost 36% of their mass in just 5 days. The pH of vinegar, 2.6, is much more acidic than the pH of the Earth's oceans, 8.1, but the demonstration was an effective way to grab students' attention.

Following the OA demonstration, Blue Hill students worked with the Friends of Blue Hill
Bay to collect OA data on soft-shell clams (*Mya arenaria*). Within a designated area, the students collected all of the clamshells and sorted them by size. Next they used calipers to measure the length and thickness of the shells. The information they collected was entered into a database and the project will continue over several years to determine if changes in shells are occurring.