

Sara Chaves Beam is a high school marine science teacher at the Chesapeake Bay Governor's School for Marine and Environmental Science. This summer she was an NSF funded Teacher at Sea for the SCeMFIS project "Ocean quahogs (*Arctica islandica*) recruitment and life history dynamics."

The objectives of the teacher participation are as follows:

1. Provide a research field experience for a teacher focusing on teaching marine science to gifted high school students. Through this field experience the teacher will, in turn:
2. Introduce students to coastal oceanography as an extension of their curriculum focus on the Chesapeake Bay, the largest estuary in the continental United States.
3. Introduce students to simple quantitative data collection, analysis and decision tools in support of natural resource management.
4. Provide students with an introduction to long-lived marine species as indicators of climate change.

Working with researchers from the Virginia Institute of Marine Science, SCeMFIS, and the National Marine Fisheries Service - Northeast Fisheries Science Center, Ms. Beam participated in the first leg of the annual survey cruise to Georges Bank.

After her education at sea, Ms. Beam is now turning this experience into lessons for her students that focus on problem-based learning in fisheries. Specifically, how are fishery scientists able to assess benthic clam stocks in a large oceanic remote habitat? Students will consider the challenges scientists face in managing natural resources in the ocean, quantifying the stock and consider the many variables that affect population dynamics, especially of an unusual species like *Arctica islandica*. Students will also consider *Arctica* as an example of a very long-lived species, and study the phenomenon of "negligible senescence." Further, they will study *Arctica* biology and the challenges these organisms face in a changing ocean climate. During these lessons, students will use quantitative and hands-on tools in their study of *Arctica islandica*: data analysis using graphing and statistics, and clam dissections, so that they can experience the scientific process in an authentic manner. Using this fisheries platform, students will encounter a broad swath of science, technology, engineering and math (STEM) critical skills and concepts, gaining an insight into fishery science, and its role in broader oceanographic studies of climate and ocean ecology.