under the sea

A Coventry HS Teacher explores the depths of the Mediterranean with Bob Ballard

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COVENTRY — Over the summer, one of Coventry High's science teachers boarded the E/V Nautilus and with Dr. Robert Ballard, set out to find ancient shipwrecks.

The expedition began in June and sessions officially concluded in December. Coventry High School teacher Tiffany Risch participated for one two-week leg of the trip off of the coast of western Turkey. Twenty other educators from around the country boarded the Nautilus for portions of the research project that was led by Ballard, the world-famous oceanographer most commonly known for his discovery of the sunken wreck of the HMS Titanic.

Teams comprised of scientists, engineers, navigators, educators, videographers and crew traveled in the Mediterranean off of the coasts of Turkey, Italy, Spain, Greece and as far as Israel. On Risch's portion of the trip, they discovered nine ancient shipwrecks, some of which are estimated to be from the second and third centuries B.C.

"We came across things like anchors but we were more interested in the piles of amphorae," she said.

This is because amphorae are typically the only indications remaining of these undiscovered shipwrecks, she explained.

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ABOVE: Coventry High School science teacher Tiffany Risch poses for a shot with famous oceanographer Robert Ballard aboard the E/V Nautilus during her time on board as part of a research team that spent two weeks in the Mediterranean Sea looking for ancient ships and artifacts on the sea floor. Ballard is best known for his role in discovering the final resting place of the HMS Titanic and bringing to the surface some of the trove of artifacts from the doomed luxury liner.

RIGHT: The Nautilus, docked during the expedition.

Photos courtesy Tiffany Risch

Teacher from CHS helps find ancient wrecks

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"The wooden shipwrecks have now been eaten away by different organisms or disintegration over time, and now what is left are these clay pots," said Risch, explaining that the pots, now called amphorae, were commonly traded during ancient Greek periods.

To pinpoint the amphorae, researchers aboard the Nautilus used a device known as a side scan sonar that would map out the bottom of the ocean using "acoustic pings," she explained. Then, using the acoustics, the device would paint a picture of the ocean floor.

Researchers would then send two Remotely Operated Vehicles (ROVs) to the depths of the ocean with high definition cameras and lights to see and record what was below. The two ROVs would be controlled by scientists in the control vehicle of the ship.

According to Risch, the ROVs, named Argus and Hercules, were designed to work together. Argus was sent down first to provide a source of light. Hercules, what Risch called the "workhorse" of ROVs, was typically used to take samples and capture images.

On their expedition, the Turkish government prohibited the ROVs from touching anything, Risch explained. Thus, to determine the age of a shipwreck, archeologists on board used a 10-centimeter laser at the amphorae to gauge the various sizes, using compare and contrast techniques on the mouths or bases.

Risch explained that this was the technique they used when estimating that some of the wrecks they found dated back to second or third century B.C.

While Risch's portion of the expedition mainly discovered amphorae and performed archeology, geology and biology research, the Nautilus made other discoveries as well.

Before Risch boarded, Ballard's teams focused on anoxic environments in the Black Sea. She explained this to mean that with each descending level of the ocean, there is a decrease in oxygen levels.

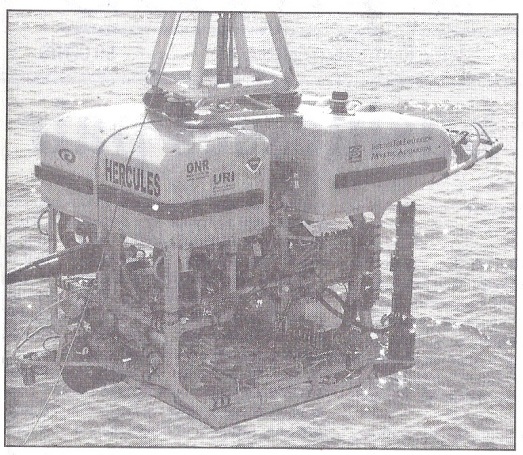
"Deep down there is hardly any, so because there is no oxygen [and] no bacteria or organisms down there, they actually found real, preserved ships. You can actually see the ax marks where somebody had cut the wood to make the ships," she said.

Risch and the other educators aboard the Nautilus kept in constant contact with their students, as well as with others across the country. The Nautilus Live website projected the research live on the internet and enabled viewers to post questions. Educators and researchers would then respond to the questions live.

Risch also participated in a live project through the Inner Space Center at the University of Rhode Island (URI) and Mystic Aquarium called Telepresence. She would lead shows, three to four times per day, explaining the daily research aboard the ship.

Many of Risch's students at Coventry High School took advantage of these opportunities to interact and learn about the expedition.

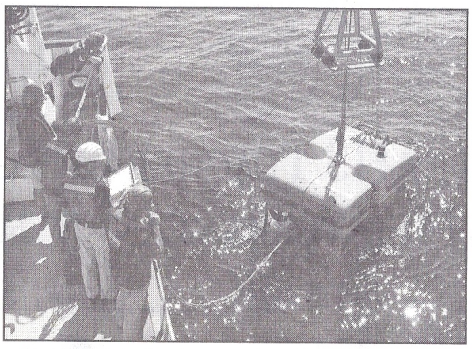
"This was Dr. Ballard's vision… to really explore and get kids interested in what's happening out there. He'll always tell you that so much of our oceans are unexplored," she said.



LEFT: A close-up of the Hercules, what Risch described as the "workhorse" of the Nautilus' pair of Remote-Operated Vehicles (ROV's). Hercules was used to take samples and artifacts, and to capture images of the sea floor.

BELOW: Crew members look on from the deck of the Nautilus as the Hercules is raised from the depths of the Mediterranean Sea.

Photos courtesy Tiffany Risch



Risch shares similar views.

"I try to instill that in my kids, to always experiment and think what else is out there that we don't know already," she said.

Risch explained that she became interested in marine biology at 5-years-old when her family used to vacation on Cape Cod, Mass. over the summers.

"One day, I ran into a marine biologist working on the beach and I wanted to stay with that guy for the whole day, to see what he was doing and what he was digging up," she explained, adding, "my mom thought I was crazy."

Later in life, Risch obtained her undergraduate degree in marine biology and master's degree in secondary education at URI. She has taught general science, biology and physics at Coventry High School for seven years.

She believes that marine biology is an important science for students to learn about, so much that she developed an oceanography curriculum for Coventry High School. The courses will be offered for the first time next fall.

"[Students] are excited about it, which is really want I want; and also to connect the oceanography into different disciplines to show them that there is chemistry and biology in oceanography, even math and history. It's not just one set science," said Risch. "My goal is to show them that there are all these different avenues you can connect in this one science."

Coventry High School will be hosting its Science Fair on Thursday, February 2. At 7:30 p.m. in the library, Risch will present her research. The event is open to the public.

Details of the E/V Nautilus' findings can be found at www.nautiluslive.org or http://isc.gso.uri.edu.

Coventry High School is located at 40 Reservoir Road.

LOTTERY

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