



NOAA Teacher at Sea Jill Carpenter Onboard NOAA Ship DELAWARE II September 5 – 15, 2006

NOAA Teacher at Sea: Jill Carpenter
Onboard NOAA Ship DELAWARE II
Mission: Herring Hydroacoustic Survey
Day 1: Tuesday, September 5, 2006

Weather Data from Bridge (still docked in Woods Hole for calibrations)
Weather data not collected while in port.

Science and Technology Log:

I arrived in Woods Hole, Massachusetts yesterday



NOAA ship DELAWARE II.

evening.
After a short walk through town, I came upon the Northeast Fisheries Science Center building and NOAA pier where the DELAWARE II was docked. For the next 10 days, this vessel will be completing part 1 of a 3-leg Hydroacoustic (water-sound) Survey, and I will be a part of it! I will bring back the knowledge and experiences that I gain and share these with my classroom of fifth grade students in South Riding, Virginia.

The DELAWARE II is a stern trawler ship, which means that it is designed to catch fish and other sea life in nets from the rear (stern) of the ship. The ship was built in 1968, is 155 ft long, and displaces 600 tons of water.

The purpose of this survey is to estimate the number of certain species of northwest Atlantic pelagic (mid-water) fish. The ship will use technologies such as multifrequency and omni(all)-directional sonar to provide information about the fish. We will also take select samples of certain species for biological data, such as weight, length, age, and prey items (stomach contents).



NOAA Teacher at Sea Jill Carpenter on board the NOAA ship DELAWARE II.

The DELAWARE II is a stern trawler ship, which means that it



Harbor scene in Woods Hole, MA, taken from aboard the DELAWARE II.

After breakfast, my roommate and I helped research fisheries biologist Dr. Mike Jech and herring biologist Karen Bolles load equipment needed for the trip. Some of the supplies loaded were computer equipment, tool boxes, life vests, and equipment for collecting and measuring fish, such as large plastic baskets, measuring boards, and waterproof labels.



Lead fisherman Pete Langlois helping load cargo that will be used Leg 1 of a Hydroacoustic Survey.

about the size of an orange, below the hull of the ship so that it is in the hydroacoustic beams. The acoustic beam is shaped like a flashlight beam. This process should be performed at slack tide (when the water is moving the least) so we have the most control of the sphere. The copper ball will bounce an echo back to the ship, and the scientists can translate that data into information that will make sense to them.

It took patience to calibrate the sonar system. First, Mike, Karen and I worked to position the copper



Sunset from the NOAA pier in Woods Hole, MA, on September 6, 2006.

About mid-morning, we shifted piers from the NOAA pier to the neighboring Woods Hole Oceanographic Institution (WHOI) pier. The first goal, before getting underway, was to calibrate the sonar systems on board. We needed to calibrate to make sure the system is working properly and to maintain consistency and standardize this survey to all previous hydroacoustic surveys. This helps scientists to find the fish they are researching and obtain important information about them such as behavior and size of the schools.

The calibration is accomplished by lowering a copper sphere, which is



Chief Scientist Bill Michaels (light blue shirt) in front of his new Advanced Fisheries Towing Vehicle (AFTV). This device will be used for the first time when the DELAWARE II completes a hydroacoustic survey. The AFTV uses fiberoptic cables to send real-time images to the ship's computer.

sphere so that it was in the sonar beams.

This was done by using downriggers (which are like large fishing reels) and fishing line to lower and adjust the copper sphere below the hull. We eventually had to postpone the calibration because of the high amount of seaweed that interfered with the echo from the sphere.

I also had the opportunity to receive a tour of the fore deck of the boat. Navigation Officer Mark Frydrych showed me around the bow and explained some of the equipment to me, such as the hawse pipe (the tube where the anchor chain drops down) and the wildcat (the drive that lifts the anchor chain and anchor. Also, I learned that rope on board a ship is called “line”.

Personal Log:

When I first caught sight of the DELAWARE II, my new home for the next 10 days, I was in awe. It looked to me like a ship that you would see on the Discovery Channel! It has so much technical equipment on board, and the ship seems so large when you are standing next to it on the pier. It was a different story when I got on board! The hallways are more narrow than I am used to, and my room is only about 7' x 10' but sleeps 4 people! I have quickly become used to the size of the interior of the ship and have learned how to maneuver quickly around the passageways.

I am most fearful of becoming seasick while on board. I keep my motion-sickness medicine and wristbands with me at all times. I am still a little worried, though, since I can already feel the ship rocking and we haven't even let the port yet!

I have been thinking of my students today and wondering how their first day of fifth-grade is going. I am looking forward to returning and getting to know each one of you! I hope your year is off to a good start and I am eager to share my experience with all of you! Take care of Mrs. Nelson!

Question of the Day:

1. How old is the DELAWARE II?
2. What does it mean to “displace” water? Can you think of a time when you have displaced water?
3. I learned that lengths of chain are measured in “shots” instead of feet or meters. A shot is 90 feet of chain. If 5 shots of chain are needed to be released in order for the anchor to touch bottom, how much chain will that be?