



**NOAA Teacher at Sea
Beth Carter
Onboard NOAA Ship RAINIER
June 25 – July 7, 2007**

**NOAA Teacher at Sea: Beth Carter
NOAA Ship: RAINIER**

Mission: Hydrographic mapping of Gulf of Esquibel, Alaska. Bottom sampling in Steamboat Bay, Roller Bay, Iphegenia Bay, and the Arriaga Passage
Day: 10– July 4, 2007 Happy 4th, everyone!

Weather from the Bridge: 6:00 a.m.

Visibility: 10 miles
Wind Direction: 080
Wind Speed: 3 knots
Sea wave height: 0-1 feet
Swell wave height: none
Seawater temp: 12.2 degrees C
Dry bulb temp: 12.2 degrees C; Wet bulb temp: 11.1 degrees C
Sea level pressure: 1012.2 mb
Cloud Cover: Partly cloudy, 5/8
Fathoms: 18.3

Science and Technology Log:

On July 2, I went on launch #2 to observe the process of bottom sampling. I would like to write in simpler language so that perhaps my first graders can read this and understand what we did.

Our boat driver today Corey Muzzey, and the two surveyors were Matt Boles and Shawn Gendron. Their job today was to take samples of the sea floor. To do that, they use a special brass “claw” that is weighted down by a lead weight. They drop the claw down on a very long rope, and when it hits the bottom, a spring snaps the claw shut, and it grabs whatever is on the bottom. Then, they pull the rope and claw back up with a special winch and pulley, and look at what they got.



Survey technicians Shawn Gendron and Matt Boles are retrieving the “grab” from sampling the bottom.



Matt is holding a mixture of mud and shells that came out of the grab.

Sometimes, the claw picked up seaweed and mud. Sometimes, the claw grabbed pebbles, coarse sand, fine sand, or gravel. A few times, it didn't pick up anything, because the claw landed on solid rock.

The boat driver had a special chart that he looked at to find the 19 places where they were supposed to drop the claw. Some of the spots were over 300 feet deep!

They were taking these samples for two reasons: 1) The RAINIER is checking for new, safe places for anchoring for boats that use this area. 2) It is important to know what the sea bottom is like because different kinds of animals live on different types of bottom. Note that sound waves bounce off sand and rock and pebbles in very different ways. For example, sound waves that hit mud return to the boat softly. Sound waves that hit rock bounce back with

more "force", and the surveyors can tell the difference!

The RAINIER's small boats, or launches, use the sound waves much as bats use them to locate obstacles when they fly. Dolphins also send out high-pitched sounds to "echolocate" their food or enemies or boats. The RAINIER uses sound waves to create maps of the sea floor.

They do this by sending out sound waves, or sonar, from the bottoms of the launches. Then they watch and record carefully how the sound waves bounce back. They turn those recordings into maps of the ocean floor. So, the bottom samples help them to label the maps and charts for fishermen and boaters. They write labels on the charts like "RKY" for "rocky" areas, and "S" for sand, "SH" for shells, etc.

Personal Log

Today we had some crazy weather. First it was sunny and calm, then windy, cloudy, rainy, and then calm again. We saw several whales feeding near us. We also saw a small rocky island that had 30-40 Steller sea lions...the males were huge! They have just had



A colony of Steller sea lions lies on jagged rocks in the Arriaga Passage.

their pups, but we couldn't get close enough to them to see the pups. It was a bit rough out today, and so when I tried to shut a door, I banged my shin on a door frame. I bled so much my whole sock was bloody! I was glad the boat had a great first aid kit.

Questions:

1. When I saw the “claw” (look at the picture), I thought of two things...one is a piece of construction equipment, and one is a game that you can usually find at a video arcade or place like “Jungle Rapids” in Wilmington, N.C. Can you imagine what I am thinking of?
2. Why does it matter to a fisherman how deep the water is where he is fishing, or what kind of bottom there is below him?