



NOAA Teacher at Sea
John Schneider
Onboard NOAA Ship *Fairweather*
July 7 – August 8, 2009

NOAA Teacher at Sea: John E. Schneider
NOAA Ship *Fairweather* (S-220)
Mission: Hydrographic Survey - Shumagin Islands
Geographical Area: Shumagin Islands
Date: July 8, 2009

Position

Small boat/launch operations vicinity
Herendeen Island (Shumagin Islands
Group)

Weather Data from the Bridge

Wind: light & variable
Temperature: 12.7°C
Sea State: 1 foot

Science and Technology Log

Today I'll be heading out on the Ambar (an aluminum hulled inflatable) to check on a tide gauge off Herendeen Island. It might get chilly being off the *Fairweather*, but the weather has been fantastic since we left. Waves <1 foot, winds below 5 or 6 knots. Weather actually got better as we went to the tide station. (I'll try to get a good shot of each of the launches.)



National Ocean Service Benchmark



The tide gauge interface being downloaded to a weather/shockproof laptop computer

The tide station is a remarkably simple in concept, yet a terribly complex operation to execute. A month ago, *Fairweather* personnel installed a tide station on Herendeen Island. This involved sending a launch to the island where personnel did the following setup work:

1. Drill a ½ inch hole 3” deep into a solid piece of granite and set a bronze bench mark into it.
2. Drill 3 more holes into a huge granite boulder at the water's edge. Construct, on that boulder, a vertical tide gauge with markings every centimeter, ensuring that the bottom of the gauge is both lower and higher than the tide should go.



It's a little weird to see the Ambar leave after dropping us off on an island that has seen very few footprints!

nitrogen bubble out of the orifice every six minutes (one-tenth of an hour) and measures the pressure it takes to release the bubble which is then used to calculate the depth of the water (as a function of pressure.)

Collected data are automatically sent by satellite to NOAA.

A month later, the survey team re-visits the site and performs a series of 10 visual observations coordinated with the automated sequences of the nitrogen bubble data recorder. These visual observations are then compared to the automated data acquired. If their statistical differences are within accepted parameters, the data are considered valid and will be used further. If not, the data are discarded and collection is re-started.

Not only is the process painstaking, but the *technology and Research & Development* needed to design the equipment must have been extremely difficult. However, given the amount of our nation's dependence on marine commerce and movement of goods, it is time and effort more than well spent.

Once we returned to the ship, I was able to lend a hand on the fantail (that's the aft area of the deck where a LOT of work gets done) where the survey team was collecting samples of the ocean bottom. Bottom sampling is done at specific locations proscribed by NOAA



A piece of coral on a pebble. (It's on a 3x5 file card for scale.)

3. Precisely and accurately determine the height of the benchmark in relationship to the heights on the tide gauge.
4. Send a diver down below the lowest tide levels and install a nitrogen-fed orifice connected to a hose and secure it to the sea floor.
5. Connect the hose to a pressurized tank of nitrogen on shore.
6. Install a solar power panel near the station with a southern exposure.
7. Install the data acquisition interface. This piece of equipment forces a single

guidelines for coastal waters. It is important for mariners to know the type of bottom in an area in case they need to anchor or engage in commercial fishing.



Coming back, the Fairweather, after being out of sight from the Ambar, is a welcome sight!

This 130-pound tool captures a 3-liter sample of the bottom. The scoop is spring loaded on the surface and when it strikes the bottom a very heavy weight triggers the scoop to close, picking up about 1/25 of a square meter of bottom. Bottom characteristics are then recorded with the position and will eventually be placed on nautical charts. Sometimes even small animals get caught in the grab. Today we saw brittle stars, tube worms and a couple of little crabs. However, the biggest surprise to me was finding numerous small pieces of CORAL in the samples! I certainly did not expect to see coral in *ALASKAN* waters!

Personal Log

Lest you think that it's all work and no play, we anchored tonight after a 12 hour+ work day. With sunset at around 2330 hrs (11:30) there was still time for some fishing (nothing was kept but we caught a couple small halibut) and movies in the conference room. There are movies aboard almost every night as well as closed circuit images from 4 areas of the ship

I've also started taking pictures of the menu board every night but won't post all of them because of space limits on my file size – besides, you all simply wouldn't believe how well we are fed on the *Fairweather*. Just as an example: how does blackened salmon wraps sound for lunch??? Oh yeah!!! (You have permission to be jealous!)



This octopus was about 2 feet across from tentacle-tip to tentacle-tip and changed color when it got over the spotted light-colored rocks.

Animals (or other cool stuff!)

Observed Today

Saw a whale in the distance, quite far off, just before lunch. Two seals a couple hundred meters aft of the port quarter. While at the tide station we saw two **whales'** spouts near the

shoreline, one **seal** poked his big ol' head up from the kelp bed and checked us out a couple of times, saw a bunch of **loons**, **cormorants** and **puffins**, and while at the tide station, Dave Francksen (a *very* helpful member of the survey team) caught sight of an **octopus**.

Questions for Your Investigation

What phylum and class are octopi? Are Brittle Stars?

What “day shape” does the *Fairweather* display when anchored? When conducting survey operations?

What do you call the kitchen on board a vessel?