



NOAA Teacher at Sea
Barney Peterson
Onboard NOAA Ship RAINIER
August 12 – September 1, 2006

NOAA Teacher at Sea: Barney Peterson
NOAA Ship RAINIER
Mission: Hydrographic Survey
Day 9: Tuesday, August 22, 2006

Weather Data from Bridge

Visibility: 10 n.m.
Wind direction: light airs*
Wind speed: light airs*
Seawater temperature: 11.1°C
Sea level pressure: 1012.0
Cloud cover: cloudy
* "light airs" means there is little or no wind

Science and Technology Log

The major reason for the hydrographic surveys that NOAA is doing is to produce very accurate charts so vessels can navigate safely in U.S. waters. To add to the usefulness of the water depth information, survey teams also take bottom samples at selected locations. The results of these samples allow mariners to know where they are most likely to find good bottom so their anchors will hold firmly when dropped.

Bottom sampling is much lower tech than the hydrographic surveys. It involves the computer only to record the information that is gathered. Actual samples are taken by lowering a sampling device on a nylon rope.

The device works like a clamshell with two bowl-shaped halves that are attached and hinged at the top and scoop together and then hold the sample as it is retrieved from the bottom. The halves are pried apart and set with a spring-loaded trigger that sticks down to the level of the edge of the open halves. When the sampler hits bottom, pressure against the trigger by the bottom surface makes the sides snap shut, hopefully scooping a sample of the bottom as they come together. To be sure that the sampler goes right to the bottom and is not dragged away from the target area by currents, there is a lead weight fastened to it just below where the rope is attached.



A lead weight is fastened to the end of the bottom sampler.

This looks and sounds simple, and usually it works every time. However some kinds of materials scoop and hold more easily than others. On some casts the sampler may not descend straight down so the trigger doesn't strike hard enough to spring the sides closed. Other times the bottom surface may just not scoop: rock size may be too large or the surface may be too hard.

After the operator thinks the sampler has struck bottom and sprung shut, it is raised, either by pulling up the line hand-over-hand, or by hooking the line into an electric winch. As the sampler



Analyzing the bottom sample.

reaches the side of the survey boat, the operator grabs it and brings it on deck to hold it over a bucket while it is emptied. Ideally, as the sampler is opened its contents rest firmly in the two halves. Sometimes the bottom material is runny mud or sand and gushes out through the operator's hands as they open the sampler. The sampler is always opened slowly to get the best results possible.

Once the bottom sample is visible, it is evaluated according to a rating sheet and characterized by description. Examples might be: "green sticky mud," or "coarse black sand and broken shell." There is a chart that describes the texture of

each particle type to help surveyors characterize them as uniformly as possible. For example, "pebbles" means specifically very small rocks (less than 5 mm) that have been smoothed by the action of water and sand. Later, these characterizations are "cleaned up" into more exact terms and coded into the information on the survey sheets for each particular area. As with depth measurements, each sample site is identified very accurately by GPS coordinates so that it will appear in exactly the right location on navigation charts.

Personal Log

This evening the XO and I got a ride on the skiff (small, light boat) over to the shoreline south of our anchorage. It was a "wet" landing...meaning we jumped out into the water and waded ashore because the beach had such a gentle slope that the boat couldn't get in any closer.

We left our life jackets by a log on the narrow, rock beach and climbed up a steep bank about 20 feet to a field of beautiful wildflowers. The whole area was covered with a heather-like plant called Crowberry that had lots of dark, purplish-blue berries. Sticking up through that were blooming spikes of Fireweed and Lupine. Mixed with those were the bright green of ferns, bright red bunchberries, and a shrub like our salal that I couldn't find a name for.

Hiking across this "field" was much more difficult than it looked. The ground beneath the thick vegetation was full of lumps and channels. Root masses of the plants were raised a foot or more

from the rest of the surface so we had to pick our way carefully to avoid plunging into holes. The ground felt soft and spongy, but it was not slippery. We hiked across the narrow neck between our bay and Mist Harbor on the other side of the island.

Mist Harbor consists of a very sheltered body of water, protected from the open sea by a thin finger of steep, rocky beach that almost totally walls it off. There is lots of sea weed and rocks are covered by barnacles and mussels. Right above the rocky beaches there is very thick grass about 3 ½ to 4 feet tall that is very hard to get through. In many places the grass covers piles of old fishing nets, drift logs, ropes, floats, and other trash that has washed ashore over the years.



Crowberry, Fireweed, and Lupine grow abundantly at Mist Harbor.

We hiked around the perimeter of the harbor as far as we could.

There was an orange float out in the center that is supposed to be for a research project by the Fish and Wildlife Service out of Homer, Alaska. On the southwest side of the bay we found Salmonberries growing on the cliff. A little careful climbing earned us both a good handful to feast on. Yum! These salmon berries have a little different leaf than the ones I know back home and the ripe berries are dark red instead of orange. The flavor was the same.

As it started to get late, we hiked back and radioed to the ship for our skiff to come back and get us. On the way back across the land we spotted a small land mammal, probably a Pika. It was the first land mammal I have seen in these islands because they are so far from the mainland that most creatures would not deliberately swim to get to them. They look like they should be populated by bears, foxes, and goats, but actually they are havens for many kinds of birds.

Question of the Day

What is the state flower for Alaska?

Barney Peterson

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