Day 11, August 14, 2006

Photo1: This is a Hawaiian Jasmine de Rosa.

After our usual morning breakfast, we reported downstairs to begin our 0830 classroom sessions. A quick check of the ship's position verified our latitude at 30° North and our longitudinal reading of 132° West. We are currently traveling on an E/NE path. Other reported conditions at sea include water temperature of 21.3° Celsius, air temperature at 19° C, and current seas of two to three feet. We are 732 nautical miles from the California coastline, which translates into 842 statute miles (1.12 nautical miles equals 1.0 statue mile).

Photo 2: These are the graduated sieves used for sorting sand grain-size.

Today, was day two of instructional sessions with our three individual groups. There were morning and afternoon sessions. The morning follow-up lesson for Makoa Wahine's was in Geology. Misty Savel presented the second half of her PowerPoint, which explained the oceanography value of several of the experiments we had performed during the previous lesson. We used the graduated sieves to sort the ***shell hash***, or sand, that we had collected and dried from the North Shore of O'ahu.

Afterwards, we placed petri dishes filled with sand under microscopes where we examined an abundance of foraminifera. The teachers' afternoon session was entitled, *Wind, Waves, and Swells*. The GEWS had this schedule but in reverse order!

Photo 3: This shows the sand classification of North Shore shell hash.

Photo 4: Wind is "picking-up" observed from the seas from the *Pathfinder* deck.

The morning session for the KAATNN Predators was a follow-up lesson with AJ Pearson on *Wind, Waves, and Swells* with an outdoor, first hand look at the beautiful Pacific to reinforce the concepts covered. We all agreed that there was probably a 15-knot wind blowing with light, white crests on some of the breaking waves. The day itself was overcast and resulted in a late afternoon shower.

In the afternoon, Tom Best presented his rendition of *Mapping, Charting, and Geodesy* which is the mathematical estimation of the size of the Earth (http://www.oceanservice.noaa.gov/education/kits/geodesy/welcome.html). Tom addressed the use of scale and sounding, which is finding the depth of the ocean. In the early days sounding was accomplished by a "lead line," i.e., a rope knotted at determined intervals attached to a piece of lead and dropped over the side of the ship. Tom also told us about "Mark Twain;" this was a sounding system in which the Mississippi river boat pilots would "toss-out" a lead line from the bow of the boat to establish if the channel was deep enough for travel. "Twain" implies the channel has enough depth for the boat to pass, thus calling to the ship's captain, "mark twain!" (http://www.boatsafe.com/nauticalknowhow/marktwain.htm). Additionally, the shape of the Earth was discussed, as was various types of maps used aboard ship. The *USNS Pathfinder* uses the Mercator map for charting, which is also used on 90% of all ships today. Tom demonstrated ship tracking, the old-fashioned way, with hand and brains using the eleven-point divider, Gerber scale, triangles, and a two-point compass. At the conclusion of Tom's session we received a survey map with elevation lines of Loihi that was charted on our survey, as did all of the Sea Scholars,

Photo 5: Tom Best demonstrates the eleven-point divider.

Photo 6: Saralee Lamb, Sharon Walker, and Sam Aceil observe mapping.

Photo 6: Joan Turner and Regina Sumner put finishing touches on their group project.

For the past few days time between and after classes had the Sea Scholars refining their presentations of a favorite lesson plan that was brought from their respective classrooms to share with the group. Additionally, many Sea Scholars are putting the final touches on group presentations. These were developed on enhanced content knowledge from our classes while aboard ship. These demonstrations will be presented during evening meetings.

The evening began with a lesson on meteorology presented by Ruthie Hollis. The Sea Scholars then applied their knowledge in meteorology by completing forecast maps.

Photo 7: Ruthie Hollis reviews weather factors for the Sea Scholars.

The next presentation was a group effort from Greg Graeber, Joan Turner, and Regina Sumner. The activity, "Flashlight Frenzy," involved the role of fish bioluminescence in the sea. Using flashlights, we portrayed feeding and behavior patterns of many species of the fish community.

Photo 8: "Flashlight Frenzy" is explained by Regina Sumner, Joan Turner, and Greg Graeber.

The final demonstration of the evening was a team project based on the principle of osmoregulation. It was entitled, "Honey, I Shrunk the Carrot." Working with a time frame of 24 hours, two carrots were soaked in salt water and fresh water. We viewed the carrot stalks and compared the changes that occurred in both solutions. This team consisted of Mary Ruch, Lois Eppich, and Carol Ann Drane.

Photo 9: Sea Scholars demonstrates the process of osmosis.

As our day came to an end, we found the *USNS Pathfinder* at latitude 31° N, longitude 130° W, and "sadly," 655 miles from port.

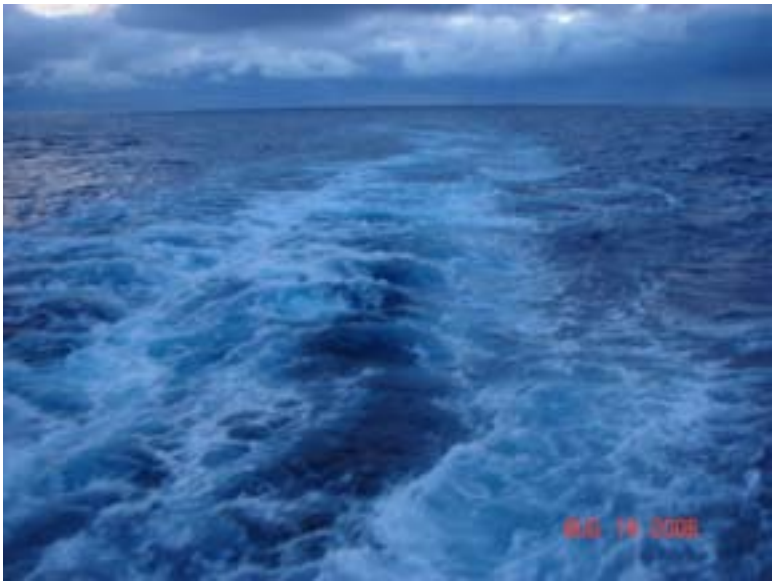

Photo 10: The view is from the stern of the *USNS Pathfinder*.

Signing off from the big, blue Pacific,
Ruthie Hollis and Rita Kaplan