



NOAA Teacher at Sea
Kimberly Wolke
Onboard NOAA ship RAINIER
July 24-August 11, 2006

Mission: Hydrographic Surveys of the Shumagin Islands, Alaska
Day: Monday, August 7, 2006

Weather from the bridge at 1100:

Skies: Clear (C)

Visibility: 10 nautical miles (nm)

Wind Direction: West (W)

Wind Speed: 8 knots

Waves: 1 foot

Sea Water Temp. (°C): 10.0

Sea Level Pressure: 1021.3 millibars (mb)

Temp. (°C): 11.1 (air temperature)



Moonrise in Porpoise Harbor, Nagai Island, AK.... after 11pm!

Log 11

Science & Technology

Today has been the absolute best weather we've had since we left Kodiak. The skies were clear, the water was calm, and the temperature was perfect! This is after having a beautiful moonrise last night. At 0700 I joined three other crewmembers for a few hours of shoreline surveying in the Porpoise Harbor area. Shoreline surveys are different than the work we were doing previously. We needed to go out an hour earlier during the low



TAS Kim Wolke operating the echosounder on a hydrographic survey of the Shumagin Islands in Alaska

low tide since rocks, ledges, and other shoreline features are more exposed at this time. The purpose of our survey today was to confirm or disprove the existence of certain shoreline features that could not be verified by the LIDAR, such as the existence of rocks or islets. Prior to the RAINIER doing their survey work, planes flew over the area using a technology called LIDAR, which stands for Light Detection and Ranging. The distance to an object or surface is determined by the time delay between the transmission of a laser pulse and the detection of a reflected signal. This information helps in forming a model of the area. The laser uses shorter

wavelengths than radar would, therefore, a higher resolution image is produced.

The survey boat we were using today was equipped with a single-beam sonar system since we were in very shallow water. The deeper water we were surveying on the other boats used a multi-beam system. The boat went to designated areas and slowly moved in a series of figure 8s to get readings from the transducer mounted on the hull (bottom). In addition to the readings being recorded on the computer system, an echosounder created a visual image of the soundings being received, called a “paper trace”. My job was to operate the echosounder when we were logging data. Once we returned back to the ship, the data needed to be processed, similar to the processing of the data taken from the line surveys to eliminate any “noise”.

While we were out on the survey boat, we saw an immature Bald Eagle (*Haliaeetus leucocephalus*) perched on a log on the coastline. The distinctive white head and tail of the adult Bald Eagle are not seen for 4-5 years on the immature eagles. Bald Eagles, which are the symbol of our nation, are the second largest raptor (bird of prey) in the state of Alaska, with a wingspan of up to 7 ½ feet (2.3 m) and weights of 8 to 14 pounds (3.6-6.4 kg). The Stellar Sea Eagle is the largest. The Bald Eagle is more abundant in Alaska than anywhere else in the United States. Their largest nesting densities occur along the islands of Southeast Alaska. Bald Eagle nests are usually built close to water. They will often use and rebuild the same



An immature Bald Eagle (*Haliaeetus leucocephalus*) taking flight



TAS Kim Wolke hoisting up the anchor ball as NOAA ship RAINIER anchors in East Bight of Nagai Island, AK

next each year. The male and female eagle work together to build their nest in early April and two to three eggs are usually laid by late April. Once the chicks hatch after 35 days of incubation, they stay in the nest for another 75 days to grow and develop. The main diet of Bald Eagles is fish such as herring, flounder, pollock, and salmon as well as waterfowl, small mammals, sea urchins, clams, crabs, and carrion.

Personal Log

We moved the ship to the other side of Nagai Island again, this time to East Bight. Each time we anchor, we need to hang out an anchor ball over the bow of the ship as a signal to other ships that we are anchored. I had the opportunity to be the person to hoist up the anchor ball today. Like other things on the ship, there are certain traditions. I had to actually wait for the anchor to begin being dropped before I could hoist up the anchor ball.

What amazing scenery surrounds us! In mid-afternoon I went kayaking again with the acting CO, CDR Julia Neander. We were able to get close to the shoreline and discovered that there were little caves that went under the rocks in front of us. It was tempting to explore further, but my better judgment restrained me from doing so. There are such incredible geological formations in these rocks! As we paddled, many puffins circled around us and floated in the water. Not only did we see the horned puffin (*Fratercula corniculata*) today but there were also tufted puffins (*Fratercula cirrhata*). One easily recognizable difference in the two birds is the yellow tuft of feathers on each side of the tufted puffins head. Every time I tried to get a photo they'd all fly away!



**CDR Julia Neander, acting
Commanding Officer of RAINIER,
kayaking in East Bight of Nagai Island**

Kim Wolke
Teacher at Sea ☺