NOAA Teacher at Sea
Jennifer Fry
Onboard NOAA Ship *Miller Freeman*
July 14 – 29, 2009

NOAA Teacher at Sea: Jennifer Fry
NOAA Ship *Miller Freeman* (link: http://www.moc.noaa.gov/mf/)
Current location of ship: www.shiptracker.noaa.gov (choose *Miller Freeman*)
Mission: 2009 United States/Canada Pacific Hake Acoustic Survey
Geographical area of cruise: North Pacific Ocean from Monterey, CA to British Columbia, CA.
Date: July 23, 2009

Weather Data from the Bridge
Wind speed: 15 knots
Wind direction: 350°from the north
Visibility: clear
Temperature: 12.0°C (dry bulb); 11.8°C (wet bulb)
Sea water temperature: 9.7°C
Wave height: 2 ft.
Swell direction: 000°
Swell height: 4 ft.

Science/Technology Log

We began the day conducting 2 **HAB** (Harmful Algal Bloom) sample tests of the ocean. This tests the amount of plankton in the water. Scientists test this because some plankton can carry harmful toxins that can get into the fish and sea life we eat, such as clams.

Here I am in the lab helping with the HAB samples.

Later we sighted numerous marine mammals including: 2 humpback whales (breaching), 12 Pacific white-sided dolphins, and California sea lions.

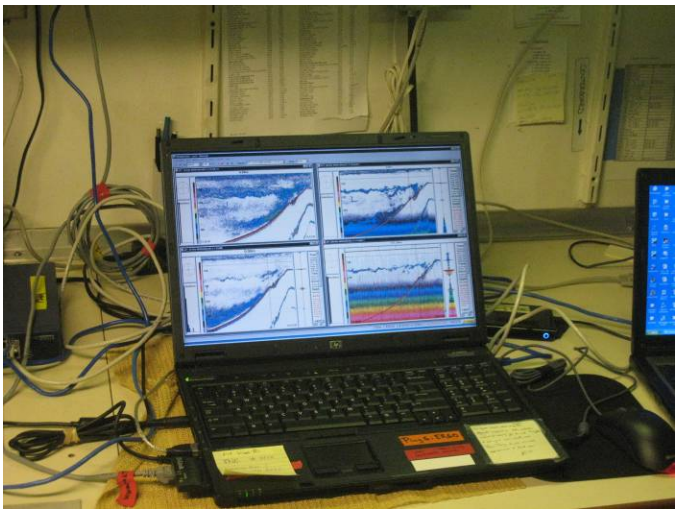
Pacific White-sided dolphin

Humpback whale

Humpback whale breaching

Humpback whales

We made two trawls which provided plenty of hake for us to observe, measure, and collect data.



Acoustic data

Acoustic Judging: One important aspect of the acoustic hake survey is what scientists do when not trawling. There is a process called **judging** that fishery biologist, Steve De Blois spends most of his day doing. While looking at acoustic data, he draws regions around schools of fish or aggregations of other marine organisms and assigns species identification to these regions based on what he sees on the acoustic display and catch information gathered from trawls. He uses 4 different frequencies to "read" the fish signals—each shows different fish characteristics.

Having started at the Alaska Fishery Science Center in 1991, this is Steve's 19th year of participating in integrated acoustic and trawl surveys and his eighth acoustic survey studying Pacific hake. He's learned how to read their signs with the use of sonar frequencies and his database. Steve tells us about the importance of science: **"Science is a methodology by which we understand the natural world."**

Steve De Blois, NOAA Research Fishery Biologist, shares acoustic data with Julia Clemons, NOAA Oceanographer, aboard the *Miller Freeman*.

New Term/Phrase/Word
Pelagic: *relating to, living, or occurring in the waters of the ocean opposed to near the shore. In terms of fish, this means primarily living in the water column as opposed to spending most of their time on the sea floor.*

Did You Know?
Northern fur seals are **pelagic** for 7-10 months per year.
Pelagic Cormorant birds live in the ocean their entire life.

Animals Seen Today
Humpback whales (2)
Pacific white-sided dolphin (12)
California sea lions (6)
Northern fur seal

In Praise of…Harmful Algal Bloom Samples

Crystal cold ocean water running through clear plastic pipes
Be patient as containers are carefully rinsed out three times.
The various sized bottles are filled with the elixir of Poseidon
Accurate measuring is essential.
Consistency ensures accurate results.
Once the water is filtered, tweezers gently lift plankton-laden filter papers.
All samples await analysis in the 20°F freezer.
Data from each test is later recorded;
Levels of domoic acid,
Chlorophyll,
And types, populations, and species of
Phytoplankton and zooplankton.