



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 29, 2009

Weather Data from the Bridge (0800)

Wind speed: 10 knots

Wind direction: 345° from the north

Visibility: fog

Temperature: 14.1°C (dry bulb); 13.8°C (wet bulb)

Sea water temperature: 10.6°C

Wave height: 1 ft.

Swell direction: 320°

Swell height: 3-5 ft.

Air pressure: 1011.0 mb

- **Weather note:** There are two temperature readings taken on the *Miller Freeman*.
The **dry bulb** measures the current temperature of the air.
The **wet bulb** measures the absolute humidity of the air; uses a thermometer wrapped in a wet cloth.
- The dry and wet temperatures together give the dew point and help to determine humidity.

Science and Technology Log

Those aboard the *Miller Freeman*: including NOAA Corps, crew, and scientists were randomly selected to answer the following question.

How are science and the environment important to the work you do?

Here are some of their responses:



Lisa Bonacci, Chief Scientist/Research Fish Biologist, M.S. Marine Biology

“As a Fisheries Biologist at NOAA I work in applied science. Our research provides information that managers and policy makers use to make important decisions at a national level. These decisions help the United States keep our fisheries sustainable and at the same time protect our ocean ecosystems.”



Pat Maulden, Wiper, Engineering Department

“I like being part of the solution. If you’re not part of the solution, you are part of the problem.”



John Pohl, NOAA Oceanographer, B.S. Oceanography

“Every action has a consequence. Science improves our understanding of the world around us and consequences of our actions in the natural world. We are not separate from the environment in which we live. We can’t hold ourselves out of the natural world, or we will affect the balance.”



Steve DeBlois, NOAA Research Fish Biologist

“Science is a methodology by which we understand the natural world.”



Jose Coito, Lead Fisherman

"I try to help the scientific research on the ship whenever I can. I enjoy my job."



LTJg Jennifer King, NOAA Corps Officer, B.S. Marine Biology

"Science helps understand natural processes: how things grow, and how nature works. We need to help protect it. Science shows how in an ecosystem, everything depends on one another."



Steve Pierce, Physical Oceanographer, Oregon State University, Ph.D. Physical Oceanography

"None of this research is possible without math. My study is a cool application of math."



John Adams, Ordinary Fisherman

“Science helps you understand why things go. The environment is really important to protect because it’s the only one we’ve got.”



LTjg Oliver Brown, NOAA Corps Navigation Officer, B.S. Geology

“Understanding the processes of today to predict and sustain the systems of tomorrow. Anything you can study: fisheries, atmospheric or any “ology”, the ocean plays a part in it.”



Adam Staiger, Second Cook

“Remember to clean up after yourself.”



Francis Loziere, Able Seaman, B.S.

Chemistry/Engineering

“Studying science can help foster original thinking. We need original thinking to save the planet.”



Julia Clemons, Oceanographer, M.S. Geology

“Science helps us to better understand the world we live in so we are not ignorant and live in a more responsible and aware manner.”



Chris Grandin, DFO, Canadian Fisheries, Biologist, M.S. Earth & Ocean Sciences

“We’re here to keep tabs on the fish resources of our planet, to ensure that there will be fish for the future generations, and to sustain our ecology. We all need to take responsibility.”



Dezhang Chu, NOAA fisheries, Physical Scientist, PhD Geophysics

“To study science you need devotion and dedication. It’s not something you make a lot of money at, but you can contribute good things to human society.”



Gary Cooper, Skilled Fisherman,

“I’ve always loved the sea. You get out of a job, what you put into it. Set your goals high and you’ll be successful.”



Melanie Johnson, NOAA Fishery Biologist

“Taking care of our environment, it’s the right thing to do. We need to live responsibly and sustainably; we can’t over fish or litter our world. If you don’t want it in your backyard, don’t put it in the ocean.”

No Photo

LT Lindsay Waller, NOAA Corps Officer, M.S. Environmental Sciences

"Science is in and around us everywhere and a big part of everything we experience in everyday life. From Xbox to iPods and weather to oceans, our lives are influenced daily by creative, young minds that had the courage to challenge what they were told and ask the questions of why and how things work."



Mark Watson, Wiper, Engineering Department

"Life and science go hand in hand; you can't have one without the other."



Ed Schmidt, First Assistant Engineer, Relief Chief

"In my field of engineering, science and math go hand in hand. You have to have both. On the science side, there are relationships between different fluids, gases, and the theories behind what make the equipment work. You need to use math to find combustion rates, horsepower, electricity produced/consumed, and the list goes on and on. Without math and science I wouldn't have a job."

The Miller Freeman's Engineering Department

The engineers aboard the *Miller Freeman* are a group of hard working people. There are always engineers on duty 24 hours/ day to ensure the ship is running properly.

Jake DeMello, 2nd engineer, gave me a tour of the *Miller Freeman's* engine room. Jake attended California Maritime Academy where he received his Bachelor of Science degree in Marine Engineering. He has a 12-4 shift which means that he works from noon to 4:00 p.m. and then again from midnight to 4:00 a.m. Before taking the job aboard NOAA's *Miller Freeman*, Jake worked on a Mississippi River paddle boat traveling from New Orleans north past St. Louis through the rivers' many dams and locks. He reminisced on one memorable moment aboard the paddleboat; the day he saw Jimmy Dean, the famous singer and sausage maker. Jake and the other engineers do many jobs around the ship including checking the fuel and water levels throughout the day and fixing anything that needs repairing. The *Miller Freeman* is equipped with a machine shop, including lathe and welding equipment.

Among the jobs of the engineer is reporting daily fuel levels including:

- **Hydraulic oil** used for daily fish trawls, CTD, gantry, and winch operations.
- **Gasoline** used for the “Fast Recovery Boat.”
- **Diesel fuel** used for the main engine.
- **Lube oil** used for main engines and generators.

Fresh water production: The ship’s water desalination machine transforms 2,000 gallons of sea water into fresh drinking water daily. The ship’s water tanks hold a total of 7,350 gallons of fresh water.

Another job of the engineer is taking soundings throughout the day/night. Taking soundings means measuring the levels of liquid in the tanks. There are tanks on both the starboard and port sides of the ship. The engineer needs to be sure that fuel levels are evenly distributed so that the ship will be evenly balanced in the ocean.



Jake DeMello stands by the desalination machine in the *Miller Freeman*’s engine room.

Vocabulary

Starboard: right side of the ship.

Port: left side of the ship.

Personal Log

I write this off the coast of Oregon in the North Pacific Ocean. It has been an amazing 17 days aboard the *Miller Freeman*. I feel honored to have participated in NOAA’s Teacher at Sea



program. It has truly changed the way I look at science in the classroom and has given me a better understanding of how scientists conduct research on a day to day basis in the field.

I am excited to have made so many learning connections between the real world of scientific study and the elementary school science classroom. I thank NOAA, the Teacher at Sea program and the entire crew, NOAA Corps, and scientists aboard the *Miller Freeman* for this opportunity.

We say good-bye to the hake both big and small.



My profound gratitude goes out to the dedicated science team aboard the Miller Freeman for all they have taught me.