



NOAA Teacher at Sea
Bryan Hirschman
Onboard NOAA Ship *Miller Freeman*
August 2 - 17, 2009

NOAA Teacher at Sea: Bryan Hirschman

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 leg 3: North Pacific Ocean from Newport, Oregon to Port Angeles, Washington

Date: August 10, 2009

Weather Data from the Bridge (0800)

Visibility: 4 nautical miles

Wind: 14 knots

Wave Height: 2 ft

Wave Swell: 5-6 ft

Ocean temperature: 14.4⁰C

Air Temperature: 16.0⁰C

Science and Technology Log

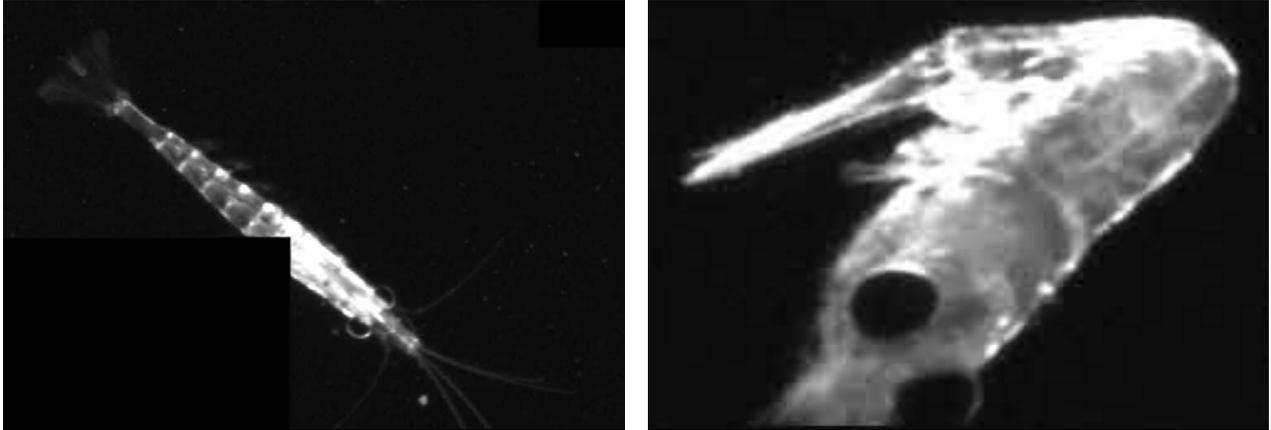
Today, John Pohl, one of the fish biologists showed me the VPR (video plankton recorder). The camera is attached to the CTD (Conductivity, Temperature, and Depth), which is operated by Steve Pierce, a physical oceanographer, and Phil White, chief survey technician, who work the night shift. The CTD is a large apparatus which has room for many additional sensors and attachments. The CTD onboard the *Miller Freeman* has a dissolved oxygen sensor in addition to the VPR. Each night Steve sends the CTD down to the seafloor (about 7 times) to collect data. He is most interested in determining the differing densities of water at different depths (depth is based on pressure, which the CTD measures). He then calculates the densities using conductivity and temperature. By measuring conductivity (how easily electric currents pass through the water sample being tested), Steve can get a measurement of that water sample's salinity. Density of water is then calculated from measurements of salinity, and temperature. An equation is used which relates the measurements so that density can be found if these other two values



The CTD which measure conductivity, temperature, and depth

are known. Steve records all the data each night, and will use this information to study currents and their movements.

The VPR is a camera which records video as well as still pictures as it descends to the sea floor. The data are recorded, then uploaded to an external hard drive. The file is very large, as it takes about ten minutes to transfer all the data. The pictures and video will be used by biologists (not on board presently) to identify and determine the percentage of plankton (plankton consist of any drifting organisms) floating throughout the water column.



Two pictures of plankton taken with the VPR

Each time before we set out the fish nets, two people go to the bridge to look for marine mammals. If any are present the nets won't be put into the water. A few tows have been



Here I am holding a sleeper shark.

cancelled due to the presence of marine mammals. This is a great step in keeping them safe. It is always special when I see dolphins or whales.

The only fish tow of the day (no marine mammals present) consisted of mainly Humboldt Squid and some Pacific Hake. Today we used a load cell to get a total mass; this is a device which hooks up to the net and crane. The load cell gives a mass of the entire haul. The majority of the load was released back into the water while a smaller sample was retained. The weights of the Hake and squid were then determined using bins and a

balance. The scientists can use the subsample data to determine the data for the entire load.

Bycatch, defined as living creatures that are caught unintentionally by fishing gear, are occasionally found in the net. Today a rougheye rockfish was caught, and yesterday a sleeper shark were accidently caught. The scientists do a very good job of limiting bycatch using their acoustic data.

Personal Log

I am enjoying the long hours of work, and have gotten into quite a rhythm. I also enjoy spending time with the hardworking and intelligent staff here on board. We work together as a team, and everyone enjoys their jobs. NOAA has chosen a great group of officers who set a very positive tone and make the ship a great workplace. I would love to take a sabbatical from teaching and work on a NOAA ship. I'm having a lot of fun and learning a bunch. I will take back a lot of positive experience to share with my students, family, and friends.



A rougheye rockfish – what a pretty fish

I have also learned to appreciate the smells of a load of fish. As we move the fish from the holding cell, to small baskets for weighing we are constantly splashed in the arms, face, mouth, eyes, etc. I find it pretty amusing every time I get splashed, or even better, when I splash John, Melanie, or Jake. It never grows old.

The hardest portion of my day is determining what movie to watch while running on the treadmill (I finally mastered the art of the treadmill on a rocking boat and can leave the elliptical trainer alone). The boat has close to 800 movies to choose from.

Animals Seen Today

Pacific White-Sided Dolphins
Rougheye rockfish
Humboldt Squid
Pacific Hake
Albatross
Shearwaters
Murre

Poem of the Day

Squid ink, squid ink!
O! How you make me stink!
You stain my face, you stain my clothes;
I must wash you off with a fire hose!

You make me scratch, you make me itch,
You even turn Melanie into a wicked witch!

(which is a horribly difficult thing to do—
She's as gentle as a lamb in a petting zoo!)

Why not John, allergic to your ink!
Torment HIM with your venomous stink!
But no--not ME! All I want are Hake.
So torment instead “almost” graduate Jake!

But once again, though our dinner hour,
Because of you I must shower!

So I beg you, O squid, to hear my plea:
In the future, stay away from me!
Does that sound good? Do we have a deal?
If not, well then—you're my next meal.

Answers to Last Question

Ribbon Barracudina

Pacific Hatchetfish

Baby Humboldt Squid