

Jillian Worssam, Teacher at Sea

Day: One

Tuesday July 6<sup>th</sup>, 2004

20:15

Longitude:	171° 25	Sea Wave Height:	0-1'
Latitude:	57° 11	Swell Wave Height:	0-1'
Visibility:	12 (nm)	Sea Water Temperature:	9°C
Wind Direction:	177°	Barometric Pressure:	1026.1
Wind Speed:	8.1 kts	Cloud Cover:	100% stratus

### **Haul Data**

Depth of haul:	78m
Temperature at depth:	4°C
Species breakdown:	Walleye Pollock / Chum Salmon / Jellyfish

### **Science Log:**

Our first haul for this second leg of the Bering Sea MACE (mid-water assessment and conservation engineering) survey (July 5 – August 1, 2004) was completed at 20:00 with the predominantly walleye catch having been measured for length and the otolith( ear bone) removed. At this point a data base was established to facilitate in the maintenance and establishment of quotas for fisheries management.

Fisheries Biologist Kresimir Williams recorded the data from the haul; fish length, weight, and maturity status. This is very critical information as the Bering Sea pollock fishery is one of the most successful and healthy fisheries in the world. It is this data that is used to determine how large a catch a commercial vessel can remove for each fishing season. Kresimir has been a fisheries biologist for almost six years researching pollock and developing data streams to assist the North Pacific Fisheries Management Council in determining catch limits.

### **Personal Log:**

I am working the four to four shift; four in the afternoon to four in the morning, heck of a schedule for a summer vacation. The best part of this phase is that with the northern summer daylight, you never feel tired; it is light all the time.

This is an amazing experience, an opportunity to see how others live. I have managed to meet everyone on the boat from the Captain CO, to the Chief Scientist, and find it amazing the lives they have chosen to lead. Thrust into this diverse world I am able, ever so briefly; to see how others live, how they earn a living, make daily contributions to society, find happiness.

The Miller Freeman, as I have been told has one of the most rigorous schedules within the NOAA task force, with approximately 260 days a year at sea. Many of the crew considers this vessel the “work horse” of the fleet, managing to collect data that is vital in fisheries management. It is also amazing to observe the crew and officers on board as they have super attitudes, considering they spend approximately nine months away from their families. I have though been told that as the days get longer (actually shorter) and we get closer to our thirty day mark that the moral officer has to work a bit harder to keep spirits elevated. All I know is that I have been welcomed into all aspects of this vessel, from the engine room to the galley, the

scientific labs to the weight room. Today I learned how to sex a fish, ever so basically; I mean can anyone think of a better way to spend a vacation?

Day: Two

Wednesday July 7<sup>th</sup>, 2004

20:05

Longitude: 60°	Sea Wave Height: 3'
Latitude: 172° 18	Swell Wave Height: 0-1'
Visibility: closing 5-8 nm fog	Sea Water Temperature: 7.9C
Wind Direction: 214	Barometric Pressure: 1028 strong high
pressure	
Wind Speed: 5 kts	Cloud Cover: complete

### **Haul Data**

Depth of haul:

Temperature at depth:

Species breakdown:

### **Science Log:**

The plan for tonight is to run a MOCC trawl to test the equipment prior to live sampling, but lets back up a moment and look at the device used for this fish collecting experiment. Originally known as the KMOCC (Karp Multiple Opening and Closing Codend), the MOCC as it is commonly known is a scientific piece of equipment designed to allow scientists to selectively sample specific layers in the ocean. MOCC has the ability to collect fish samplings from a maximum of three different stratum, allowing the scientists choice. Pollock of different sizes tend to congregate at different oceanic layers and through the use of equipment like the MOCC scientists can look at sonar and choose from which population they would like to sample, without contaminating the haul with fish from different size groups. This form of selective sampling will aid the researchers in observing specific fish (pollock) populations.

Today there have been no fish trawls as according to the sonar data the ships transects have not passed any significant fish populations.

### **Personal Log:**

I am on a 215 foot research vessel, touring the Bering Sea looking for walleye pollock, and can sit at this computer for an hour, watching the sonar all alone. With over thirty individuals living on this floating community it never ceases to amaze me that the schedules can be so well devised as to allow people their individual space. With a spare moment one might even be seen sitting in their stateroom relaxing. This amazing personal space is a person's home away from home and usually has two residents. Each individual will work mirror hours so that while one person is sleeping, the other is working. Why is this fact so important? Well let me explain to you how many staterooms on the Miller Freeman are designed.

As you enter a stateroom there is on one side a set of berths, similar to a bunk bed, but Spartan by necessity. Each berth is approximately three feet wide and two feet high. Not a lot of room for movement, but functional in the processing of sleep. After the berth there is a spartan sink, a small desk, and two built in closets, all in a space that is eleven feet long and approximately five and a half feet wide. (Please realize that the 5.5' included the beds, closets everything, so walking space is at its best at 2.5' in the very middle.) The closets are not standard sized actually

they are miniature and already contain your personalized life jacket and survival suit. Once inside the survival suit though you might have more room than in your berth. Space aside the rooms are functional, and a little cozy. I have slept in my berth for a few nights, and with the rocking of the boat and the lull of the engine it is as comfortable as an old porch hammock, on a warm summer evening as the breeze lulls you to sleep.

Day: Four  
Friday July 9<sup>th</sup>, 2004 21:15

Longitude:	57°	Sea Wave Height:	0-1'
Latitude:	172° 44	Swell Wave Height:	0-1'
Visibility:	25 yds fog	Sea Water Temperature:	9.3C
Wind Direction:	69.6	Barometric Pressure:	1022 strong high pressure
Wind Speed:	14.1 kts	Cloud Cover:	complete 100%

### **Haul Data**

Depth of haul: 89 meters  
Temperature at depth: 4.1° C  
Species breakdown: walleye pollock, chum salmon, smooth lumpsucker, unidentified jellyfish

### **Science Log:**

First haul of the evening and to our surprise pulled up a smooth lumpsucker (*Aptocyclus ventricosus*). What an amazing fish quite large in girth, but relatively short( approximately 10 inches). A large globe shaped body with the ventral sucking disk. We placed the fish in water and released it back into the Bering.

As for the rest of the catch, quite a few chum salmon this time, so I anticipate some smoked snacks tomorrow. I am becoming more and more comfortable with the process of slicing the fish to determine gender. Tomorrow will attempt the removal of the otoliths. Amazing the data that can be removed for the preservation of an ecosystem. We are off to complete another haul right now, so I am off to don my rain gear: thick rubber pants, rubber boots, and rubber jacket. I must also wear a hard hat and life jacket when on deck while the cranes are in motion and the ramp is down. With the ramp down it is easy access to the ever cold Bering Sea.

### **Personal Log:**

Well I did it, finally tackled the treadmill, what a treat. My body had wanted to jog for days so in thirty minutes this morning I completed three miles, and for the first time ever I was jogging below sea level as the workout room is toward the bottom of the boat. Amazing the difference between 7000' and sea level. The way the treadmill is situated it rocks back and forth not side to side, it is similar to walking rises, with an uphill climb every now and then.

I also spent some more time in the bridge today. I would like to learn all the equipment so tonight I was taught about the EOT (Engine Order Telegraph) The one instrument on the bridge that actually looks familiar as it has probably been in every old war sea movie ever made. You know the big round brass machine with a level and an arrow, and the person on deck moves the arrow to face the command they would like sent to the engine room. The commands vary from

full ahead to slow, half even stand by. Now with modern technology this apparatus is obsolete, but still on board in case of emergency and the electronics fail.

I was also introduced to an amazing centrifugal force windshield washer, but those details will have to wait until tomorrow.

Day: Five  
Saturday July 10<sup>th</sup>, 2004 1:20

Longitude:	59° 50	Sea Wave Height:	1-2'
Latitude:	173° 14	Swell Wave Height:	0'
Visibility:	2.1miles fog	Sea Water Temperature:	9.4C
Wind Direction:	121.6	Barometric Pressure:	1019 high pressure
Wind Speed:	11.3 kts	Cloud Cover:	complete 100%

### **Haul Data - Methot**

Depth of haul: 20 meters  
Temperature at depth: 7° C approximate  
Species breakdown: walleye pollock year 0, Amphipod- type of crustacean,  
Chrysora jellyfish

### **Science Log:**

The Methot haul is when the nets are set out, but at the end there is a cylindrical tube of PVC. It is this tube in which the sample will be taken. Holes are drilled in the side to let the water run through, but there is a mesh screen which prevents the specimens from escape. The purpose of the Methot trawl is to collect younger samples of fish, and as the younger pollock tend to stay higher in the water, and this device is perfect for sampling. Most of the pollock were year zero meaning that they spawned this past April. There is also a relationship between the juvenile pollock and the jellyfish as the “Jellies” (common term) provide shelter for the young fish. Walleye pollock are cannibalistic and will eat younger smaller fish that could well be their own children.

One of the scientists on board Taina Honkalehton has just returned from Tasmania where she was contracted by the Australian government to study orange roughy, a species that has been over harvested that they are now trying to save as a viable harvest species. Pollock on the other had is a well managed species, where at this time approximately 20% of the population is being utilized for commercial ventures. Pollock are the fish of fish sticks, a very important economic product on a global scale, with pollock as the largest single species fishery in the world making oceanic ecosystem management very important. Approximately 1.8 million tons of Pollock are harvested annually. Part of the management plan for pollock is based in part to their relationship to the stellar sea lion. As an endangered species management needs to look at fish harvesting and see if there is a relationship between the decline of the sea lion and changes in fish numbers.

### **Personal Log:**

Running late tonight, having too much fun gutting fish, measuring jelly fish and cleaning. I have often wondered the purpose of jelly fish. As an Easterner by birth my only experience has been the Portuguese Man of War, the stinging variety that invariably closed our local beach. The jellyfish we have been seeing not only provide habitat for many other aquatic species, but that are also a nutritious food source. Monterey Bay Aquarium has a wonderful display of jelly fish. An amazing species, so beautiful in their basic simplicity.

I promised I would talk about the spinner, which no one has been able to give me a scientific designation for. This amazing piece of technology is a circular window approximately two feet in diameter, the ships windshield. During winter months the entire window of the bridge often freezes up, and this device, through the use of centrifugal motion, manages to keep an area clear for viewing. The glass of the spinner, you guessed it, spins at a very fast rate thus keeping the viewing surface clear. It is a funky tool, and so far my favorite on the bridge.

Day: Six  
Sunday July 11<sup>th</sup>, 2004 23:52

Longitude:	59° 32	Sea Wave Height:	2'
Latitude:	173° 51	Swell Wave Height:	2-4'
Visibility:	1.5miles fog	Sea Water Temperature:	9.9C
Wind Direction:	221.	Barometric Pressure:	1012 high pressure
Wind Speed:	9.1 kts	Cloud Cover:	complete 100%

### **Haul Data – CTD (conductivity / Temperature / Depth)**

Depth of haul: 90 meters  
Temperature at depth: 10° C surface - 2° C at bottom  
Species breakdown: Informational gathering / no species collection

### **Science Log:**

The CTD is a device that is hard to explain. Scientific in nature similar to an inverted cone that has a six inch diameter at the top. Today we will look at the condition of the water, the liquid habitat for this ecosystem. Conductivity will give the scientists, with some calculations, the percent of salt in solution. This is important information as the salinity affects the density of the water which in turn affects the speed of sound. Knowing the speed of sound is vital in acoustic fisheries surveys as the scientists use back scatter data in determining fish location and density. The density of water is also affected by the salinity and temperature of the water.

Today's temperature at 90 meters was 2°C, at the surface it was a balmy 10°C. Ocean water like our atmosphere is in layers, each a distinct unit. The thermo cline was at 35 meters, with a graphic representation showing a distinct differentiation between the two water masses.

The CTD data is used in looking at correlations between where fish populations are found and if their placement is not only affected by the condition of the water, but if there are conditions that they prefer.

### **Personal Log:**

Understanding the CTD has been difficult for me. This ecosystem is literally poles apart from a ponderosa pine type forest. I am learning an amazing amount of information and at the same time realizing how much I do not know. Oceanography is an amazing science, and phenomenally diverse.

Once again I spent an hour on the bridge, 2400-0100, standing watch. I did not realize that this nautical term is in fact correct as there are no seats on the bridge except the CO's chair which is off limits. I was told that there is a common yarn that the captain's chair is directly above his stateroom, and attached to a bell. If someone sits in the chair the bell will ring indicating that sacred territory has been breached. When a person stands watch for four hours, they stand watch. There are some counters with cushions to brace against, but that is it. While standing watch last night I got my first glimpse of a dall's porpoise. The pictures that are commonly seen of porpoises show the entire animal usually gliding gracefully with a wave. Our view last night was a glimpse, a peak into the life of a marine mammal. It was Mark, the field operations officer who first spotted the sign, a brief splash within the bow wave of the boat. The porpoises travel the wave of a boat, literally catching rides. At one time there was the splash of three heads effortlessly coming up for air, a brief splash and again they were lost in the wave only to be seen moments later literally in the same place even though we were all moving forward.

There is a calmness here when the fog moves in, a sense of peace. We are out of touch with time, yes there are news briefs, but one does not need to read what is going on in other places. I am ok with the solitude, the sound of the engine the gentle rocking of the boat. This is a serene place to be, in summer!

August 9, 2004

Hello All, This will be my final visit from Alaska, The voyage on the ship is over, but I am far from done with this journey. It is amazing how much life can be packed into a month, and I feel ever so fortunate to have had this opportunity. My heart is full, my mind has been challenged. I am a bit sad as I miss the camaraderie and new friendships, thank goodness for e-mail. Thank you all for your support this past month, my goodness has it ONLY been a month!....hope you enjoy this last entry. Jillian I have attached a photo, hope it works....Also one of my last poems! As the humpback breaches I see a splash, a tail and then nothing. In the blink of an eye this mighty creature has defied gravity. I am in awe! Again and again the aerobatics continue for what reason I do not know, only that as witness I have been given a gift. A tufted puffin paddles by and I am inspired, so glad to have this moment, and so aware of the fragility of life. Seals lay upon floating pieces of ice, their guards down as they relax in pure abandon. I too am relaxed, enjoying the breeze as it plays against my skin. Loving the boats motion, as swell upon swell try to breach our hull. My heart beats to a new rhythm and I am humbled by the grandeur of this place!

Never in my life has a month passed so quickly, literally in the blink of an eye I have had the experience of a lifetime. So much has happened and I am a different woman. Thirty days ago I was prepared to walk in the shoes of another, to taste a different career and learn. Now that time has passed, and the shoes fit so well that I am tempted, so tempted to change the patterns of a life time. NOAA provides an amazing opportunity for teachers and I urge all educators to take advantage of their generosity, for they have enhanced my world beyond mere words.

One week ago I caught my first Halibut, over 50 pounds, and it was quite a challenge to land. I was then taught how to bleed the fish to improve the quality of the meat prior to my lesson on how to fillet. The tender pieces of flesh have been vacuumed packed and will be sent to me for shared consumption. Two weeks ago I hung from the gantry, thirty feet above the deck removing the cotter pin from the block holding the third wire (scientific equipment that sent data back to

the ship while we were fishing). My safety was in the hands of men whom I had not previously known, and I had no fear. The pin was tricky, the pliers slippery in my hand, failure was not an option. I was trusted with a job, so there was no hesitation, I would succeed.

Three weeks ago I gutted my first fish, checked its gender, and measured it for scientific purposes. The stomach contents were preserved for further study and the otoliths removed so that the age could be determined. I saw thousands of pollock, and many other species, and have learned to truly appreciate a new ecosystem.

Four weeks ago I stood in Dutch Harbor, Alaska about to board a 215' NOAA research vessel with no idea of what was about to unfold. Here I was a teacher from Arizona, about to spend thirty days on the Bering Sea, to study walleye pollock, a fish I had never previously heard of.

Today I am a new person, I have an enhanced understanding of life, of career and the dedication these men and women have to both. I was the student, eager to learn and wanted to be a part of everything.

I was denied nothing for 30 days, "You want to paint Jillian, here are the brushes. 'What, you really want to clean the heads, go for it.' 'Ok, I will explain it to you one more time, the line needs to be taught, then you bring the left over the right, through the hole and there is the lover's knot.'" (I never did master any knots, but that doesn't mean I wasn't an eager study) "Once the data is recorded and analyzed, fishing quotas can be established and the Bering Sea can continue to be a viable and healthy ecosystem."

This was my life, and with some melancholy I am sorry to leave. I have made friends expanded my mind, and had an amazing adventure. For many, their days hold no passion, no daily happiness. I have been reminded that life is tenuous, and not to be taken for granted. I want to get up every morning and be pleased with all that I have, and all that I can gain. I want to work with my peers and realize that the little things are not important, the big picture, the smile on my face, the spirit I hold, these are what count.

NOAA, the seventh branch, and least recognized of our military system, has given me a present beyond words, and it is with my every breath that I hope to share this gift with others. Little do my students know what is in store for them this year...as for me the adventure will surely continue!



