



**NOAA Teacher at Sea**  
**Jim Jenkins**  
**Onboard NOAA Ship MILLER FREEMAN**  
**April 18 - 30, 2005**

Day 13: April 30, 2005  
Latitude: 56, 17, 02 N  
Longitude: 165, 42, 00 W  
Visibility: 10 Nautical Miles  
Wind Direction: 355 Degrees  
Wind Speed: 14 Knots  
Sea Wave Height: 1-2 Feet  
Sea Wave Swell: 4 Feet  
Sea Water Temperature: 3.6 Degrees C  
Sea Level Pressure: 1024.0 Millibars  
Cloud Cover: Cloudy

Science and Technology Log:

**Marine Mammal Listening Device**

Earlier, a marine mammal listening device scheduled for recovery could not be picked up because the instrument responded to signals and released from its anchor, but it did not rise to the surface for recovery. You may remember the theory was that it was stuck in the mud which prevented it from rising. Well, things changed on the second effort to pick up one of these devices. This one popped to the surface and is now onboard the ship. The data and sounds recorded will be of great interest to scientists at the Scripps Institution of Oceanography.



Crewmembers retrieve a marine mammal listening device from the water.

A couple of days ago, I sent some photos of brittle stars, bivalves, barnacles and worms that had gathered on a mooring that had been 200 meters deep in the Bering Sea for about a year. Were you as impressed with all the life forms as I was?

I expected to see life forms on the marine mammal listening device because it had also been beneath the water for 1 year. You may be surprised to learn that there was almost nothing on the surface of the entire instrument! Would you like to take an educated guess

as to the reason for the lack of life on this mooring? You would be correct if you noted that this one was deployed at a deeper depth. In fact, this one was 1,800 meters deep.

The role of the sun in starting the process of photosynthesis to feed all life is pretty impressive isn't it? I hope this example helps you even more appreciate the role of penetration of sunlight into the water as a huge factor in ocean food chains.

## Bongo Tows



Crewmembers deploy bongo nets.

Four bongo shaped nets were lowered into the water this morning to catch zooplankton. Two of the nets had a 60-centimeter diameter and 133-micron holes in them. This means that anything smaller than 133 microns simply passes through the net and is not collected. Lots of phytoplankton fall into this category and are not collected.

Two more nets had 20-centimeter diameter openings and nets which had 153-micron holes in them. Can you see that these nets are set up to catch smaller plankton

species?

All nets were lowered to the bottom by a winch until they were 10 meters from the bottom. The nets are then pulled up to the surface by a winch at a rate of 20 meters per minute. All organisms are collected in a cylinder attached to the base of the net. The cylinders are removed from the nets, taken into the laboratory where they are put into bottles. The bottles are then sent to a lab in Poland where technicians use microscopes to identify the species, and the number of each species, in each sample.

Today's specimens had a lot of organisms visible to the naked eye. I will be forwarding a photo in which you may be able to make out some specimens. There were a few fish larva and even some squid larva.

Have you noticed that rivers around Virginia tend to have a greenish hue once algae populations begin to grow in the summer? Well, this process also happens in the Bering Sea. The size of the mesh on bongo nets is adjusted during the summer months because a larger amount of algae growing in the water tends to be picked up. These algae may even clog a net if too much is collected.

What can be determined by the small specimens collected in the bongo nets? For starters, finding a lot of zooplankton means that larger species are going to have more to eat. This could mean healthier populations and better fishing.

Eggs of fish collected in the tows give an indication of the future of fish populations. More eggs may mean more fish.

Our friend, the Walleye Pollock's, eggs soon turn to a larval form before developing into small fish. The larva of the Walleye Pollock have small ear bones called otoliths. These ear bones have growth rings in them which are similar to growth rings in trees. It is possible to determine the age of Pollock larva to the number of days by examining and counting the rings in its ear! Knowing the age and number of larva in the water can be extremely helpful in predicting the number of fish that are likely to be available for harvest in the future.



Mr. Jenkins displays a sample of zooplankton.

#### Argos Apex Drifters

Two instruments have been dropped into the water and they are probably not going to be recovered. In fact there will be no effort to recover them!

The first of these long yellow cylinders with satellite transmitters on the top was dropped into the water yesterday. At first, the instrument simply sat horizontally on the surface of the sea until it picked up a signal from a satellite in orbit. When the signal was received by the Argos Drifter, the instrument filled a bladder with water causing it to sit upright and sink into the sea. The instrument descends to depths of up to 2,800 meters. It then rises slowly to the surface, all the time collecting data on salinity. Upon reaching the surface, the instrument transmits all its data to the satellite. After transmission, the instrument dives again and repeats this process of collecting data for 8 or 9 months.

Plans are to have 3,000 or more of these instruments in the water of all the world's seas collecting data. Do you think that this is an improvement on having to actually travel to a particular site to collect salinity data?

#### Personal Log:

E-mails from home tell me of balmy warm weather and spring plants coming out in profusion. Conditions are a little different here today. Hands went back into pockets so that my they would not be made so inflexible by the cold that I could not use a pencil well to keep records when working on the deck this morning. A winter coat and felt

liners in my boots felt wonderful. Do you think I may have some adjusting to do when I return to springtime in Virginia?

Several of you have asked about stars. It is getting dark rather late here, so I woke up the last couple of nights at 1:00 AM to take a walk on the deck to enjoy the stars. The weather has been pretty cloudy, so I could only see two stars as I walked around the deck. You would have appreciated the flat blackness of the sky, however. I can imagine the stars being quite radiant on a clear night. I will keep looking and let you know what I see.

Surimi Crab sandwiches were on the menu for lunch today. Being a big fan of the Chesapeake Blue Crab, I ordered a sandwich and found it delicious. After lunch, I went back to the kitchen to ask Chief Steward, Russell Van Dyke, to tell me about the Surimi crab. I was surprised to find out that there is no such thing as a Surimi Crab!



Russell was good enough to go down to the freezer to get a bag of Surimi Crab so that I could look at it. I discovered that the package contained only 20% of a crab product.

Now for the question of the day: What makes up the other 80% of Surimi Crab?

Have a wonderful weekend!

Mr. Jenkins

Crab Classic contains "Surimi Crab."