



**NOAA Teacher at Sea**  
**Michele Brustolon**  
**Onboard NOAA *Oscar Dyson***  
**June 28 – July, 2010**

**NOAA Teacher at Sea: Michele Brustolon**

NOAA Ship *Oscar Dyson*

Mission: Pollock Survey

Geographical area of cruise: Eastern Bering Sea (Dutch Harbor)

Date: July 12, 2010

**Weather Data from the Bridge**

Time: 1500

Latitude: 61.18N

Longitude: 175.22W

Cloud Cover: 8/8

Wind: 16 knots

Air Temperature: 7<sup>0</sup> C/ 45<sup>0</sup> F

Water Temperature: 6.9<sup>0</sup> C/ 45<sup>0</sup> F

Barometric Pressure: 1014 mb

**Science and Technology Log**

*The floating city*

A modern city has a network of companies that provide us with modern conveniences (water, electricity, sewage, and trash removal). A NOAA research vessel provides those same conveniences to its crew through a complex engineering network. We wouldn't be able to eat, drink, take showers, or conduct research without the expertise of our engineers.



**Jerry (1<sup>st</sup> Engineer) over the sea chest**



**Contents of the sea chest**

*Lots of drops to drink*  
Sea water is

taken in by an intake valve about 6 m below the surface. It goes through a variety of cleaning processes to filter, distill and purify the water for human consumption. First, small sea creatures are removed by a filter known as the "sea chest." Next, the water is distilled using the heat from the engine under a vacuum to remove dissolved ions. The water is then purified using bromine and UV light before it is pumped into the piping system (running throughout the ship in pipes labeled "potable water"). The water is so pure that we have to add salt for the espresso

machine to recognize the water level (the science of the espresso machine will have to wait for a later entry).

### *Lights, Camera, Acoustics*

The *Oscar Dyson* requires electricity to run the ship's instruments, the scientific equipment and the lights which allow us to keep the ship operational 24/7. Our power is generated by the engines which also propel the ship forward. The *Oscar Dyson* runs on diesel fuel and uses larger, more powerful versions of the engines we find in cars. We use about 110 gallons of fuel each hour to maintain scientific and navigational operations.



**One of the *Dyson's* engines**

### *Taking out the Trash*

Kitchen and food waste are the main sources of trash on the *Oscar Dyson*. Trash is sorted



**The *Dyson's* incinerator**

and disposed of based on how it breaks down. Food, which decomposes, is released into the ocean to re-enter the ecosystem. Combustible items (such as paper, napkins, etc) are burned in the ship's incinerator which is run every night. [\(insert picture of incinerator here\)](#) Non-combustible items, such as aluminum cans, are recycled and brought back to land.

### *And out the other end*

Although a less than pleasant topic to discuss over dinner, it is important to remember that a ship must track its human waste as well. Per NOAA regulations, human waste is treated through a complex process before being released into the ocean (to re-enter the eco-system). This process, like those of water treatment plants and septic systems on land, break down the waste through multiple steps involving biological, physical and chemical reactions. Ask me

for more information if you really want the dirty details.

### *Who's watching the engines?*

The *Oscar Dyson* employs an engineering staff of seven, who have specialized training and job responsibilities to ensure proper functioning and maintenance of the vessel. Like all good engineers, they usually work behind the scenes so it was great to get an inside look at the inter-workings of the ship.

## Personal log

Day 13 of my twelve hour shifts; still no rough seas, but we have found the fish! Fishing has definitely picked up over that last few days. Unfortunately we are approaching the last days of Leg II. Both shifts have been fishing more and we are seeing different sizes of pollock in different catches. Although I am not yet an expert, I feel as though I have seen enough fish to determine that the smaller ones (1-2 years old) are much harder to work with because they are not as developed (you can ask me for details later). On the other hand, the larger pollock are smellier and messier. Yesterday after we fished, we immediately did a Methot trawl and found the tiniest squid I have ever seen. It even inked! In the afternoon when we fished, we had 2 herring in our catch. It has become a goal of mine to see something new everyday which happens often in the Bering Sea.



**Pollock on the table-ready to be processed**



**Taking otoliths (ear bones) from a pollock**

Letting the teacher part of us take over, Rebecca and I decided that we would like to take some samples of otoliths back home with us. After we fished for the last time yesterday, we measured various sizes of male and female pollock and then took their otoliths. [\(insert picture of otoliths here\)](#) Because everyone has been patient with us, this entire trip has been filled gaining experience with different types of equipment and procedures on board a research vessel. This allowed Rebecca and me to actually get what we needed on our own; a small side project if you will. I'm not exactly sure

how I will incorporate them into my lessons, but it had to be done. I can figure out the logistics later- I have some ideas!

After dinner I decided to head up to the Flying Bridge to see what the mammal observers were up to. There are five cetaceans (killer whales, Dall's porpoises, fin whales, minke whales, and humpback whales) that are typically seen in the Eastern Bering Sea along the shallow part of the shelf. I have only seen killer whales and Dall's porpoises so naturally I was on a mission to



**Paula looking through the "Big Eye"**

add to my list. While looking through the “Big Eye,” Paula Olson saw spouts from whales in the distance and took the time to help direct me. After watching along the horizon, I was able to see the blow holes of 2 fin whales. Fun fact...fin whales are the second largest mammal on Earth. Like I said...there is always something new to see. It was around 2000 hours at this point, but that means off to bed for a decent night’s sleep because 0315 rolls around fast.

### **New Animals Seen**

tiny squid  
herring  
pteropods  
ctenophores  
fin whales

### **Word of the Day**

descry: to catch sight of something in the distance

### **New Vocabulary**

hull: watertight body of a ship  
distill: remove impurities  
dissolved ions: an atom with a positive or negative charge. Ions are created when elements gain or lose electrons.  
They can be in the form of a solid or a liquid (dissolved)  
UV light: ultraviolet light



**If you look closely, you can see tiny squid in the lower left hand corner**