



NOAA Teacher at Sea
Ruth S. Meadows
Onboard NOAA Ship *Henry B. Bigelow*
June 11 – July 18, 2009

NOAA Teacher at Sea: Ruth S. Meadows

NOAA Ship *Henry B. Bigelow*

Mission: Census of Marine Life (MAR- ECO)

Geographical Area: Mid- Atlantic Ridge Charlie- Gibbs Fracture Zone

Date: Friday, June 19, 2009

Weather Data from the Bridge

Temperature: 9°C

Humidity: 95%

Wind: 4.36 kts

Scientific and Technology Log

We are currently working in the pelagic zone of the ocean. Pelagic refers to the open ocean away from the bottom. The word **pelagic** comes from a Greek word that means “open ocean”. The pelagic area is divided by depth into subzones.

- The **epipelagic** , or sunlit zone, is the top layer where there is enough sunlight for photosynthesis to occur. From 0 – about 200 meters (656 feet) deep
- The **mesopelagic**, or twilight zone, receives some light but not enough for plants to grow. From 200 – 1000 meters (3281 feet)
- The **bathypelagic**, or midnight zone, is the deep ocean where no sunlight penetrates. From 1000 – 4000 meters (13,124 feet)
- The **abyssal zone** is pitch black, extremely cold and has very high pressure. From 4000 – 6000 meters. (19,686 feet)
- **Hadalpelagic zone** is the deepest part of the ocean. These zones are located at trenches where one tectonic plate is being subducted under another plate. 6,000 meters to over 10,000 meters. (35, 797 feet)

Today we are using a special trawling net to capture organisms that live in the mid-water area around 3000 meters deep. The closed net is lowered slowly from the rear of the ship until it arrives at the correct depth. The length of the wire released is measured by the winches as they unwind. A timer is used to open the cod-ends (containers at the end of the net). It is then pulled underwater very slowly. The five **cod-ends** are set to open and close at different times so there will be samples of organisms from different depths. After a specific amount



Setting up the net that will collect organisms

of time the net is slowly reeled in. It takes about 8 hours to fully deploy and retrieve the trawl.



All the blue buckets contain various organisms

Each cod-end should have samples from different depths. Once the net is back on board the ship, it is very important that the material collected from each cod-end be kept separate and labeled correctly.

The second trawl came in around 4:30 in the afternoon. We were really excited to see the organisms that were collected in each of the cod-ends. Each container was emptied into a large bucket and a picture was taken to record the catch. One set of material was left out to begin sorting and the other containers were put into the freezer to remain cold. David Shale, the professional photographer for the cruise, selected the best samples to use for his

photographs. Then the actual sorting began. Several of us would do a rough sort, all the crustaceans (different types of shrimp-like animals) in one container, fishes in another, and jellyfishes in another. After the rough sort then the final sort is started (dividing all the organisms into groups by specie or family).



A viperfish



***Mastigoteuthis agassizii* Squid**

Certain types of organisms were abundant – hundreds of them, others were rarer – only one or two of each species. As soon as we are finished with one species, information about them is entered into the computer (number, length, mass) and then the organism is saved for later investigations by either freezing or placing in a preservative. A printed label is included in all samples so they can be identified by name, depth and location of trawl.

See http://en.wikipedia.org/wiki/Mastigoteuthis_agassizii for more information about the squid species above.

Personal Log

Everyone on board the ship is always interested in any sightings of marine mammals. The officer on the bridge will often announce to the lounge area if he spots any type of animal, “Whales off the bow.” As soon as the announcement comes on, we bolt out of the lounge to the outside as fast as we can.

Sometimes you are fast enough and sometimes you aren't. The dolphins usually are the easiest to spot as they swim in groups and surface frequently as they are swimming. The whales, however, are a little more difficult to see. They are usually far off so the distance makes them difficult to spot. When they surface, the spray from the blowhole is usually your first indication of where they are. After that, most of them dive again and you may not get a second chance to see them. So far the type of whales spotted have been pilot whales, sei whales and a sperm whale. They knew it was a sperm whale because the spray from the blowhole was at an angle. It is much more difficult to see these animals than I thought it would be. It is like trying to find a needle in a haystack – a very big haystack...



Dr. Mike Vecchione took this picture of a *Mola mola*, a very large ocean sunfish, at the beginning of the cruise off the coast of Rhode Island.

Did You Know?

The *Mola mola* is the heaviest known bony fish in the world. It eats primarily jellyfish which doesn't have a lot of nutrition in it so they have to eat LOTS of them. It looks like a fish with only a head and a tail, no middle part: http://en.wikipedia.org/wiki/Ocean_sunfish
Go to this web-site to see a picture and more information about this unusual fish.