



NOAA Teacher at Sea
Taylor Parker
Onboard NOAA Ship *Oscar Elton Sette*
April 19 – 29, 2009

NOAA Teacher at Sea: Taylor Parker

NOAA Ship: *Oscar Elton Sette*

Mission: Hawaiian Bottom Fish Survey

Geographical area of cruise: Southern-most tip of the big island Hawaii

Date: April 27th, 2009

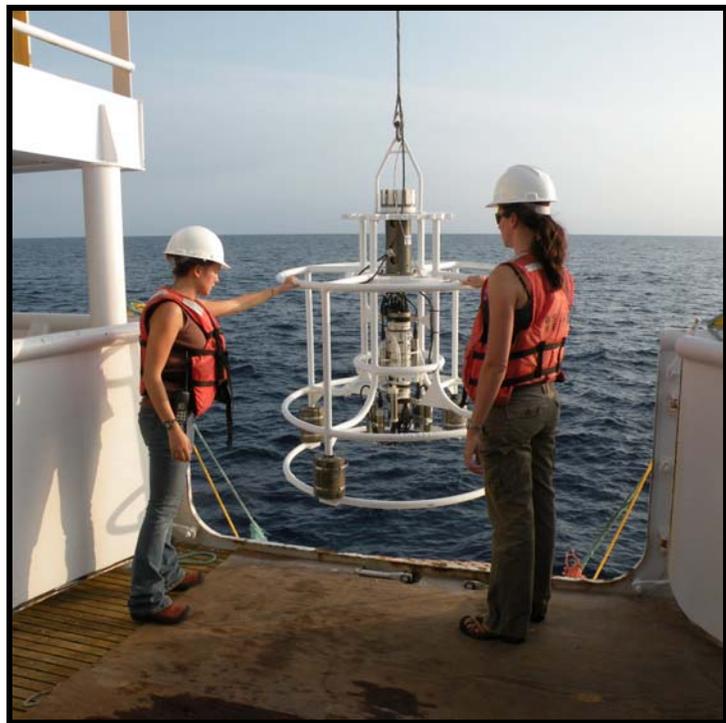
Weather Data

Partially cloudy. Minimal Winds. Air temp: 75F.

Science and Technology Log

Similar to the smaller CTD that we dropped from the SAFE boats, there is a much larger one on the *Sette* that is dropped almost nightly. The large CTD is different in several ways: it drops to a depth of 6800 meters while the smaller one will only go 600 and the larger CTD can measure

many more components. It determines conductivity, temperature, salinity, dissolved oxygen, and fluorescence. Conductivity is the amount of electrical current allowed within the sample, salinity is then measured by the conductivity and temperature, dissolved oxygen is the amount of oxygen found within between the water molecules and fluorescence is, well, exciting. Fluorescence is the measurement of chlorophyll at different depths; to do this a little LED light is shone into the water to see the excitability of the algae. Determining the amount of chlorophyll, and subsequently the amount of algae, helps to, among other things, measure the amount of the oceans ability to absorb greenhouse gases. Prior to the departure of the cruise, the scientists set up sampling sites along transects on a grid system near shore off the Kona coast. They are compiling data over the years to analyze changes in the physical characteristics of the ocean.



Scientists deploying the CTD

This part of the research aboard the *Sette* is really interesting and the impacts of the data are obvious. However, there wasn't much for me to do with this other than take photos of the Science Techs do their job and ask them questions. That is quite alright though; I lost a couple hooks while bottom-fishing but I don't think that I want to be responsible for losing that big piece of equipment.

Earlier in the day, I was participating in the routine I/K trawl and we came across a slick that had perfect conditions for the billfish we were looking for. We dropped the net and slowly came upon the slick. We set everything in the water and even put the safety line across up. Within ten minutes the entire trawl was filled with marine debris, it was filled with trash. Debris accumulation is apparently normal for slicks; along with being an area where small fish can be found, the same ocean currents bring planktonic debris. And, according to the scientists who study billfish, it is good habitat for fish larvae. Not this time. This time the whole net was filled with trash and very little of anything else. We started going through it and found a crab and a shrimp and pounds of plastic. We collected everything and dropped the net in again hoping to keep it down there longer. While the remaining trawls were less trashy, there were still significant amounts of litter strewn about.

Personal Log

The large CTD required trained professionals so I sat back and watched the two techs maneuver the large instrument. I spoke with them after to understand what they were doing. What I found most interesting was the use of the fluorometer to help measure the ocean's ability to absorb greenhouse gases. Considering the challenges facing our planet and oceans, this is incredible data that they are collecting and when the results are analyzed, I can't wait to see what they read.

Another challenge is one that we faced when trying to run I/K trawls. The amount of litter in the oceans is staggering. I have worked on many beach cleanups and have run tons of classes, educating hundreds of kids about the importance of watershed responsibility. Seeing the garbage floating freely in the water, clogging the runways of slow currents in the oceans is depressing. Talking with the other scientists they suggested I take a look at NOAA's Marine Debris Program: <http://marinedebris.noaa.gov/>. This is a very useful and informative website describing the many factors of trash in the ocean: awareness and information about hazards, education, removal projects, etc. This is a very pressing problem



A Sample of the Marine Debris Encountered

considering debris, and specifically small plastics that look like food, is found everywhere where the ocean touches shore.

Animals Seen Today

Like I said, we were picking up mostly trash in our trawls and the CTD doesn't pick up many animals. One of the small boats did happen to pick up a kind of Frogfish called a Sargassum fish (*Histrio histrio*). I was reading about them and apparently they have one of the smallest brains in proportion to their body and they are highly cannibalistic.



Sargassum fish