



NOAA Teacher at Sea
Mary Anne Pella-Donnelly
Onboard NOAA Ship *David Starr Jordan*
September 8 – 22, 2008

NOAA Teacher at Sea: Mary Anne Pella-Donnelly

NOAA Ship: *David Starr Jordan*

Mission: LUTH Survey (Leatherback Use of Temperate Habitats)

Date: September 11, 2008

Geographical area of cruise: Pacific Ocean –San Francisco to San Diego

Weather Data from the Bridge

Latitude: 3647.6130W

Longitude: 12353.1622 N

Wind Direction: 56 (compass reading) NE

Wind Speed: 25.7 knots

Surface Temperature: 15.295

Science and Technology Log

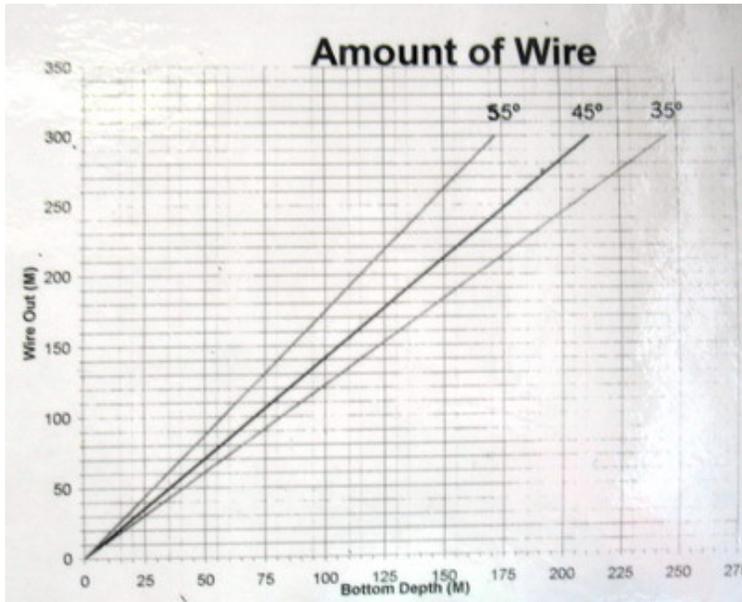
One oceanographic phenomena of interest is the deep scattering layer (DSL). This is a zooplankton and micronekton rich layer that is found below the depth that light penetrates to in the daytime. After sunset, this DSL layer migrates up closer to the surface. In some locations the daytime DSL may be at a depth of 225-250 m depth in this area of the California current ecosystem, and 0-100 m during the night. It is hypothesized that the organisms stay deeper down during the daytime to avoid predation, and move up toward the surface at night when it is safer from predators. Oceanographers take advantage of this information. Every evening, two hours after sunset, bongo nets are deployed to a depth of 200m and then slowly brought to the surface to get a sample of the entire water column. The purpose is to collect samples of those organisms that are found in the DSL. During the day these organisms would be much deeper down below the surface, but at night they are much closer.



Bongo net being deployed to collect specimens

The process begins with opening up the large plankton nets and attaching a weight in between the loops of the frame. The frame is hooked to a cable that is maneuvered by a winch operator. After the bongo net is swung out from the ship, a large protractor, an inclinometer, is attached.

This is used to give the Officer of the Deck (OOD) driving on the bridge an indication of speed



needed to deploy the net at. The OOD adjusts the speed of the ship to maintain the required angle, which allows the net to remain open for collection and reach the desired depth. Looking at the chart above, you can see that the angle the wire is deployed at, along with the amount of wire paid out, can be converted to a given depth. Trigonometry at work.

Chart that converts wire length and angle to depth

There is also a flow meter attached inside each of the bongo loops. The readings from this give an indication of the volume of water that passed through the nets. When the bongo is retrieved, before the end is detached, each net is rinsed with salt water from a hose in order to retrieve as much of the sample as possible in the

cod end. This end is detached and brought into the lab. One of the samples is examined in the lab, for relative types, while the other sample is preserved in formaldehyde and sodium borate for later examination and identification.

Personal Log

It is very interesting being rocked to sleep each night. Being on the top bunk, I am about 2 feet



Stateroom on the *Jordan*



Stateroom dresser aboard the *Jordan*

from the ceiling, with several pipes suspended from the ceiling. Once settled in bed, there is little opportunity to move around much. But being slowly rocked from side to side is a very interesting sensation, and is relaxing. It is becoming easier to tell how calm the water is that the ship is moving through, or a little about the weather, since sometimes we rock up and down, instead of from side to side. We were told that when it gets really rough it is a good idea to place a life jacket under the edge of the mattress to keep us from falling out. Each bed has a dark curtain edging it, since many of the crew and scientists may have opposite shifts.

Since there is no porthole in my stateroom, when the lights are out and the curtain is closed, it is very dark. It would be impossible to tell night from day, except by an internal clock or a timepiece. It has been comfortable sleeping. Getting up is the only difficult part, maneuvering in the small space of the bunk and being careful not to disturb my bunkmate, Liz. Her schedule varies from mine, due to her bongo net responsibilities and CTD expertise. So far the sleeping arrangement has worked out well.

Words of the Day

Distribution: the local species and numbers of organisms in an area

Biomass: the combined mass of a sample of living organisms

Micronekton: free swimming small organisms

Zooplankton: small organisms that move with the current

Predation: the process of organisms eating other organisms to survive

Inclinometer: protractor designed to measure altitude from the horizon

Questions of the Day

1. What organisms do you know of that change their feeding strategy at different times of the day?
2. In the local creek, river, or lake near you, are there both micronekton and zooplankton? How could you find out?