



NOAA Teacher at Sea
Dennis Starkey
Onboard NOAA Ship MILLER FREEMAN
June 15 – August 4, 2006

NOAA Teacher at Sea: Denny Starkey

Aboard the: MILLER FREEMAN
Salmon Tagging in the Bering Sea
July 29, 2006

“It Looks Like a Giant Milk Bottle”

Science and Technology Log

The MILLER FREEMAN’s next task was to aid two fisheries researchers conduct a trial attempt at catch and release salmon tagging. A net system is employed to haze the salmon into the center of the net. Salmon are fairly shallow surface feeders so the trawls would not be deep. In fact, our trolling regions were within two miles of Dutch Harbor.

What makes this trawl interesting is the device that gathers and stores the salmon at the end of the netting. It could accurately be described as a large old-fashioned milk bottle made of aluminum that serves as the retaining device and tank. The flowing water and salmon are swept into a 724-pound portable live tank. The ocean water is held in the confines of the tank with all kinds of surface fish and jellyfish. After the fishermen crank it up, the back of the boat with a winch, we opened the door and had live salmon to measure, tag, take a scale sample, and sometimes put on a satellite-tracking device!

The need for such a device arose from the high mortality rate of netted, and hook and line tagging procedures. The more handling and scale loss incurred during a capture results in a dramatic decrease in immediate survival for the salmon. The outcomes success rate and eventual retrieval of the tag becomes slim. The scales on the sides of the salmon are a precious defense mechanism that needs to be retained to ensure a healthy immune system and this is why the “Box Trawl” device was made. This tank system of netting was first developed by the Norwegians to further their studies of ocean fisheries. This particular model was drawn up by the Biologists and manufactured locally in Dutch Harbor.

Unfortunately, the welder probably didn’t realize what the purpose of this device was. It roughly built with sharp edges, aluminum slag pocking, and a heavy free-swinging fish door. After the first tow with these flaws, it was apparent modifications were needed to make this more fish “friendly”. Fire hoses were slashed and wrapped to cover sharp edges as were rubber tubing to cover blunt surfaces. A grinder was used to take the burs off the metal sheeting, and the door was removed to prevent added banging upon the fish. Everyone on the fishing deck seemed to help out. The results were amazing! The first trawl saw some very banged up salmon with a high loss of scale coverage. After the corrective measures, there was hardly a glitter from scale loss in the tank.

The six trawls over the two-day period resulted in an average capture of about 15 to 20 salmon per tow. Other species of fish were caught as well. Atka mackerel were numerous, and a 14-inch herring was in the tank as well. The largest catch was estimated at having about 60 fish in it. Fortunately, they all could be released unharmed due to the trawl tanks successful features.

The biologists, Jim and Jamal, are targeting Pacific King, Chinook, and Coho salmon for their study. They choose the highly commercial, or highly respected recreational varieties, because the success rate of a returned tag is higher for those particular types of salmon because of the desire for humans to obtain them.

Out of the Tank

After the door was opened and we could see what we had caught, a hose with freshly pumped seawater was inserted into the tank to supply fresh water and oxygen. Without this, fish in the tank would quickly use up their oxygen supply. Then Jim brought over a fish hammock with two handles and a button that was about a meter long. This was a “settling” device connected to a car battery. The fish obviously don’t wish to cooperate when they are removed from the water, so they are zapped with some voltage that calms them for not more than a minute and a half. Each fish is identified by species, measured for length, and plucked of a single scale sample. A tag is then inserted by means of a hollow sharp probe that contains a small round red and white tag number and information on whom to return the tag to if found. The tag itself is attached to a plastic bubble zip tie that holds the dime size tag in place. About six of the fish were fitted with satellite tracking devices as well. These state of the art clear plastic devices are about the size and shape of an average Lego block. Each one costs about \$125. This technology allows the biologists to locate this particular fish for about 5 years. These devices were installed in much the same way as the round tags.

Everyone on board enjoyed gathering around the big “milk bottle” to see what was in the tank. I especially enjoyed helping transport the fish out of the tank and helping measure them. The most satisfying part of the process was taking them over to the side of the boat and releasing them!

Personal Log

The scientific parts of my journey are now over. We will head to Kodiak Island for the end of my stay at sea. I have enjoyed the educational aspect of every mission I was able to observe and participate in. I also can appreciate the team effort that it takes to complete each mission. The ship’s fishermen have to be versatile at all kinds of fishing techniques as well as be the deck hands. The ship’s officers are top-notch navigators and responsibility lingers in every decision they make. The scientists visit the ship as a vehicle for their ideas and creations. It becomes a portable platform for the fieldwork that is contrived in their offices. The mechanics and engineers man the power plant that gives the MILLER FREEMAN life and sustenance. The ship’s galley and the cooks give

everyone a touch of home cook'n that we all miss out on when at sea. A satisfied mind comes with a satisfied belly!