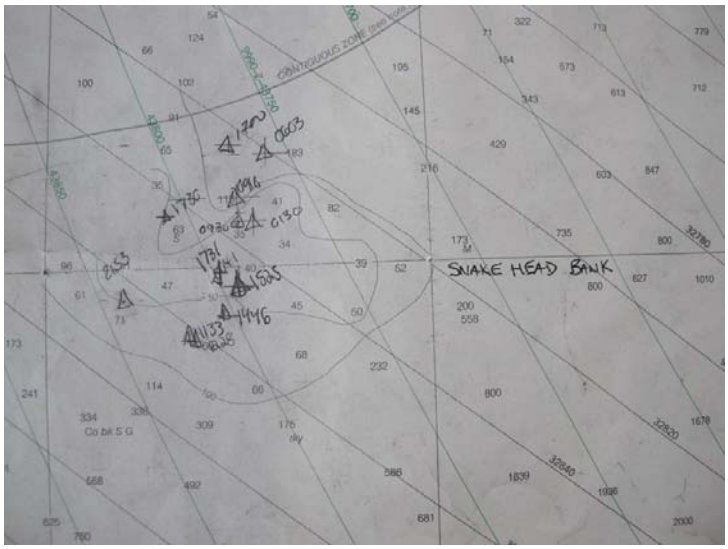
NOAA Teacher at Sea
Richard Chewning
Onboard NOAA Ship *Oscar Dyson*
June 4 – 24, 2010

NOAA Teacher at Sea: Richard Chewning II
NOAA Ship *Oscar Dyson*
Mission: Pollock Survey
Geographical area of cruise: Gulf of Alaska (Kodiak) to eastern Bering Sea (Dutch Harbor)
Date: June 7 – 8, 2010

Weather Data from the Bridge
Position: Just southwest of the Semidi Islands, Alaska
Time: 1400 hrs
Latitude: N 55 54.331
Longitude: W 156 54.606
Cloud Cover: mostly cloudy
Wind: 9.2 knots from E
Temperature: 7.2 C
Barometric Pressure: 1019.6 mbar



Snake Head Bank

Science and Technology Log
Calming seas greeted our arrival at Snake Head Bank around 1800 hours on Sunday. Snake Head Bank is an area of the Gulf of Alaska that has been designated as untrawlable habitat. Trawling is a fishing technique where a net is towed behind one or more boats. The *Dyson* will be using this technique later in our cruise to catch pollock. Fishermen trawl on the bottom or somewhere in the water column depending on what fish is being targeted. Previous NOAA surveys using both acoustic and ROV (remotely operated vehicle) data have indicated that the ocean bottom in this area contains terrain such as large rocks that could snag a trawl net skimming along the bottom.

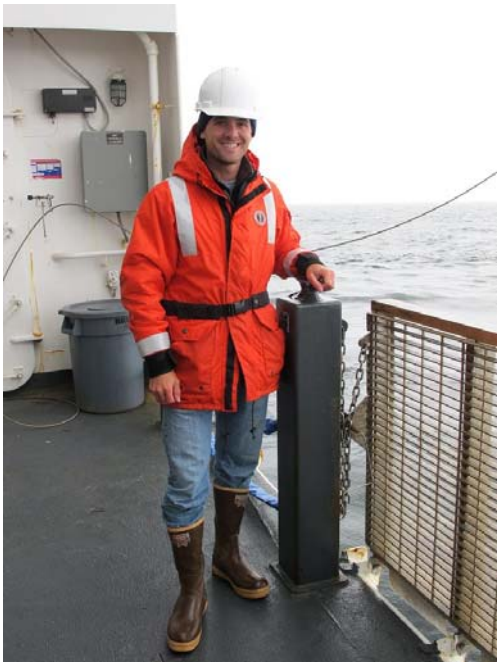
Success! Video footage from the bottom of the Gulf of Alaska

Our mission was to further study select areas of Snakehead Bank to better understand the seafloor where acoustic research had been conducted but the bottom composition had not been verified. NOAA scientists call this ground-truthing. To accomplish this task, the *Dyson*

deployed a self-contained camera to the seafloor to collect video footage. This operation requires both a specially designed rig to film on the ocean floor and the coordinated efforts from crew members from various departments throughout the ship.

Deployments are conducted day and night

You might be surprised to learn that an over-the-shelf handheld camcorder and lens were used to record the footage of Snake Head Bank. Both the camera and lens are mounted to and protected by a heavy metal frame. Similar to a roll cage of a car, this cage protects the video camera from the weights used to send the rig to the bottom and from any hazards on the seafloor such as large rocks. Since we are sampling areas beyond the depth sunlight penetrates, a light must also be included to reveal the bottom. This means our camera operations can be conducted both during the day and night! The camera and the battery for the light are protected in a waterproof case that can easily be opened to change tapes and batteries.



Richard waiting on the hero deck for camera recovery

In addition to darkness and unknown obstacles, filming at depth is also complicated by water pressure. Water pressure refers to the weight of the water pressing down (think about the pressure in your ears build as you dive to the bottom of a swimming pool). A tight seal must be maintained as water will force its way through the smallest opening. Water pressure can be enlisted to serve a useful purpose. Water pressure activates a switch once the rig reaches a certain depth turning the camera and light on and off. This conserves the batteries and ensures only the video at the bottom is recorded.

The entire rig is deployed using one of the *Dyson's* powerful winches using a long wire cable. The wire cable is threaded through a block attached to a metal support structure called the A-frame that can be extended over the side of the ship. The entire rig was constructed to be neutrally buoyant so the rig would hover just off the bottom. Plastic floats tied on top and metal chains hanging down from the rig ensured the camera was angled correctly towards bottom.

In order for a successful deployment, crew members from throughout the ship must work together. Just like any successful workplace or athletic team, these deployments require coordinated efforts, communication, and clearly defined job responsibilities.

The Officer of the Deck and Navigation officer positions the ship at each station and must keep the ship as stationary as possible when the camera is deployed so the camera is not dragged along the bottom. A member of the deck crew operates the winch and raises and lowers the A-frame. Another member of the deck crew assists a survey technician casting and retrieving the camera rig over the side. Two scientists change out the tapes and batteries, transfer and log the video, and adapt the rig as necessary.

Deployments require teamwork and coordination

Recovering remote camera rig at Snakehead

Finally, the unsung hero of this camera deployments was the science team's IT (Information and Technology) Specialist. The IT specialist on th is cruise is Rick Towler. If you like to solve problems and develop a wide range of skills, then this is the job for you. Rick saved the day on more than one occasion during the camera operations. Using some creative engineering, Rick overcame some technical difficulties with the pressure switch and wiring on the control circuit board for the camera and light. Rick is an indispensible member of the science team and is responsible for maintaining the equipment brought onboard by the scientists. When you are miles from the nearest hardware store or electronics shop, you have to be able to make do with what you have

Rick, the Dyson's MacGyver, is on the job!

and be able to think outside the box. I think of Rick as the science team's MacGyver! By the end of the survey's 42 stations, the crew of the *Dyson* was a well-oiled machine and had overcome every challenge.

Personal Log

The weather continues to improve by the hour. I am starting to find my rhythm after recovering from my drowsiness resulting from the combined effects of jet lag and the seasickness medication from the beginning of the cruise. I was surprised and pleased to learn that the *Dyson* has a large roll stabilization tank located just in front of and below the bridge. Tall buildings built near earthquake prone areas also use large containers of water to counter the swaying motion that damages buildings during earthquakes.

Dinner is served

Meals aboard the *Dyson* are a key part of any ship routine. Meals are served for one hour starting at 0700, 1100, and 1200 hours. Meals are an interesting time to visit with people. Some crew members at meals are tired as they are just coming off watch, others are wide awake and in a hurry as they are grabbing a quick bite between deployments or projects, and others are still trying to wake up as they have just left their rack even though the meal might be dinner! Dinner Monday was very satisfying: roast beef and game hen with broccoli, steamed rice, and noodles.

You might also see someone headed for their morning workout. I discovered that the Dyson has two workout rooms for those wanting a little physical exercise. I haven't tried the treadmill yet as I hear running can be a little tricky on the rolling seas!

After completing our deployments around 0545, we turned southwest for Unimak Pass. We are leaving the Gulf of Alaska behind and now heading for the Bering Sea. I am looking forward to seeing the Aleutian Islands up close as we will be sailing among the islands rather than the open sea. This will give us the benefit of smoother sailing and the added bonus of beautiful scenery along the way!

Headed to the Bering Sea!

Animals Observed from Snake Head Bank Seafloor
Rock Fish
Brittle stars
Skate (similar to a sting ray minus the barb)
Euphausiids (commonly called krill)