



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 18, 2010

Weather Data from the Bridge

Position: Bering Sea, north of Dutch Harbor

Time: 1600 hours

Latitude: N 55 06.120

Longitude: W 166 33.450

Cloud Cover: Mostly cloudy

Wind: 10 knots from the west

Temperature: 7.1 C

Barometric Pressure: 1010.8

Science and Technology Log

In order to manage a public resource such as pollock, fisheries managers must develop a stock assessment. A stock assessment is a big picture overview of a certain population of fish. Fisheries managers use stock assessments to determine opening and closing dates for fishing seasons, catch limits (the number of fish that can be caught by a particular fisherman or boat), and the total allowable catch for the season. Stock assessments are developed from a combination of fishery



Cod end filled with pollock



Unsorted catch entering wet lab

dependant and independent data. Fishery dependant data includes catch records from commercial fishing boats and reports from processors dockside that prepare and package the fish for market. Combined with this information is fishery independent data. This information is gathered from sources not involved with commercial fishing.

The *Dyson's* acoustic trawl survey is one of the primary sources of fishery independent data for the pollock stock assessment. The *Dyson's* transducers provide a wealth of acoustic data from each transect. These acoustic returns must first be identified or deciphered before being

used in the stock assessment. Just like you need a key to decode the symbols on a road map or need a scale to interpret the colors on a weather map, the acoustic returns also need to be



Walleye pollock



My what sharp teeth you have! Arrowtooth flounder

referenced with actual pollock specimens collected by trawling. By matching up the characteristics of the fish caught in the trawl with their acoustic returns, researchers can interpret all the acoustic data from the entire survey area.

Pollock specimens are collected with Aleutian wing trawls, or AWTs for short. An Aleutian wing trawl is a single large net deployed off the stern of the *Dyson*. Large metal fishbuster doors are used to open the mouth of the net in the water. The catch is collected in a bag located at the end of the net called the cod end. The cod end's mesh size prevents anything larger than 0.5 inches from escaping. Once the net is hauled back on deck, the cod end is emptied in the wet lab, and the entire catch is sorted. Fish are identified, counted, weighed, and measured. The gender



Yellowfin sole



Eulachon

and maturity of a subsample of pollock are also recorded. Stomachs are collected to determine what the pollock are eating. Finally, otoliths, the ear bones of fish, are collected. Just like counting the rings of a tree, researchers will count the number of rings in the otolith to determine

the age of the pollock. Notable bycatch (fish that were not targeted) include eulachon, arrowtooth flounder, Pacific cod, sturgeon poacher, and yellowfin sole. Misha told me Russians used to dry out eulachon whole and use them as candles because of their high oil content. In fact I learned that one of common names in the US for eulachon is candlefish!

Why gather so much information on a single species of fish like pollock? Fisheries managers are responsible for the sustainable use of public resources. Without careful monitoring, fishing pressure, natural predation, and disease might remove pollock from the population faster than they can replace themselves. There is great demand for pollock both commercially and in the Bering Sea ecosystem. Walleye pollock is the largest US fishery by volume and third largest by

value. Annual US catches can average 2.5 billion pounds. Pollock is also an important food source for Stellar sea lion, other marine mammals, birds, and other fish.



The *Dyson* in Dutch Harbor

Personal Log

On Thursday, I had the pleasure of joining two members of the deck crew, Joel Kellogg and Glen Whitney, to pick up a new addition of the science party in Dutch Harbor. Mike Sigler, a fish biologist with NOAA, is a project leader and principal investigator with the North Pacific Research Board's **Bering Sea Integrated Ecosystem Research Program** (BSIERP). He is joining the *Dyson* for the

last week of our survey. BSIERP is a six year long collaborative study with the National Science Foundation's **Bering Ecosystem Study** (BEST). More than a hundred scientists from these two groups are investigating the organisms and physical forces that make up and influence life in the Bering Sea ecosystem.

To pick up Mike, the *Dyson* launched the *Peggy D*. Named for wife of Oscar Dyson, the *Peggy D* is a small power boat used to ferry people to and from shore. Peggy Dyson is a famous Alaskan in her own right, serving as a National Weather Service ship to shore weather broadcaster. Her voice brought vital information and reassurance to Alaskan fisherman. She diligently performed these duties twice a day, seven days a week for 25 years. I really enjoyed having the opportunity to see the *Dyson* from the water as my only vantage point for the last two weeks has been from the *Dyson* looking out. I was surprised how quickly the *Dyson* shrunk on the horizon as we sped away and traveled into Dutch Harbor. Dutch Harbor felt like a true frontier town. The vehicles seemed to reflect the character of the town. While looking rough and weathered on the outside, the beat-up cars and trucks of



Recovering the *Peggy D*.

Dutch Harbor revealed a resilience and gritty determination to keep moving forward and press on against an unforgiving environment. I loved hearing the cry of the bald eagles that were spotted everywhere you looked. While I enjoyed having solid ground under my feet for a few short minutes, I appreciated the sense of familiarity and belonging I felt upon returning to the *Dyson*.

Scute visits the Bering Sea

Scute, the Georgia Sea Turtle Center Mascot, was spotted visiting the Bering Sea today! Scute, a loggerhead sea turtle, travels the world promoting awareness of sea turtles. We know Scute was



Scute visits the Bering Sea

only visiting the Bering Sea as these waters are too cold for loggerhead sea turtles. Loggerhead sea turtles are the most abundant sea turtles in US coastal waters. Scute's home is the Georgia Sea Turtle Center (GSTC) located on Jekyll Island, Georgia. The GSTC is a research, rehabilitation, and education center dedicated to helping sea turtles along the GA coast and around the world. Sea turtles released from the GSTC will often have a satellite transmitter attached to their shell just like Scute. The transmitters allow researchers to track their movements at sea. Only one of the seven species of sea turtles found worldwide can survive this far north

– the leatherback sea turtle. The leatherback sea turtle is the largest species of sea turtle reaching six and a half feet in length and weighing as much as 2000 pounds! Leatherbacks have several adaptations such as high oil content in their large bodies that help them tolerate the cold waters of the southern Bering Sea. Leatherback sea turtles feed on jellyfish and can dive to great depths because the protection provided by their leathery shell (a hard shell would crack under the high pressure of the water). For more information about Scute and sea turtles, check out the GSTC website at www.georgiaseaturtlecenter.org!