



**NOAA Teacher at Sea**  
**Roy Arezzo**  
**Onboard NOAA Ship OSCAR DYSON**  
**July 11 – 29, 2007**

**NOAA Teacher at Sea: Roy Arezzo**  
**NOAA ship: OSCAR DYSON**  
**Mission: Summer Pollock Survey**  
**Day 13: Monday, July 23, 2007**  
**Log Entry # 4**

**Weather Data from Bridge**

Visibility:	<1 nm (nautical miles)
Wind direction:	220° (SW)
Wind speed:	8 knots
Sea wave height:	<1 foot
Swell wave height:	0 feet
Seawater temperature:	9.8 °C
Sea level pressure:	1006.7 mb (millibars)
Air Temperature:	10°C
Cloud cover:	8/8, fog

**Science and Technology Log**

Consumers became very aware of the issue of by-catch when the media reported the canned-tuna industry was killing dolphins in their nets nearly a decade ago. The industry responded by changing some of their fishing methods and marketing “dolphin-safe tuna”. NOAA monitors and sets catch limits for commercial fishing, regulating by-catch, among other things. The Coast Guard assists by also enforcing these fishing regulations. Some of the scientists working here on the pollock survey have worked as fishery observers on commercial vessels, monitoring by-catch in the Alaska fleets. The by-catch regulations vary based on the region, species and season. For example, on the Bering Sea none of the finfish outfits are allowed to keep any crab, they need a special permit to keep halibut and they need to keep cod if they are fishing for pollock. Commercial trawling for pollock results in typically low by-catch. Some environmental groups have listed pollock as a sustainable fish food compared to other seafood in that the harvest does not seem to significantly harm the environment or severely deplete fish stocks. The Marine Stewardship Council, an



**Roy and Tamara get excited about birding on the bridge of the OSCAR DYSON**

independent global nonprofit organization, has certified Alaskan pollock as a sustainable fishery.

Although we are not dealing with by-catch directly, I find the connection between by-catch, sustainability and fish stocks very interesting. The Echo Integration Trawl Survey



NOAA Scientist Abby separates out *Chrysaora melanaster*, common name Lions Mane.

uses acoustic data to estimate pollock populations. When we put out our nets we do so to obtain a sample of fish, detected by our acoustic instruments. Since we are conducting mid-water trawls we bring up mostly pollock. The non-pollock species that occasionally get caught in the net are important in verifying the acoustic data and to know what is in the water column with the target species. As a science teacher, the diversity makes for interesting fishing and I have been able to observe a few organisms that spend most of their time in deep water. I have shared some of my images of the unusual species below, all of which I had never seen before this trip.

Many of the organisms we bring up go back into the water after we record the data but some of our catch makes it to the galley to be served up for meals.

### More Invertebrates



Some type of sea pen



Small squid

Flatfish tend to swim higher in the water column in the evening following the plankton



**Flathead Sole (*Hippoglossoides elassodon*)**



**Greenland Turbot (aka Greenland Halibut, *Reinhardtius hippoglossoides*)**

Other Finfish



**Pacific cod (*Gadus macrocephalus*)**



**Pacific Herring (*Clupea pallasii*)**



**Great Sculpin (*Myoxocephalus polyacanthocephalus*)**



**Smooth lump sucker (*Aptocyclus ventricosus*)**



**Shrimp from a night trawl**



**Kier, Chef and Assistant to the Chief Steward, makes a serious shrimp bisque.**



**Catch of the day: Chief Steward Rick cooks up Pollock Fish and Chips**



**Bottom trawls, conducted on the previous leg of this study, tend to have more diversity in the sample (Photo taken by Colleen Peters, Senior Survey Technician)**

**Bird of the Day:** Turns out, there is no such thing as a seagull. This was passionately explained to me by birder who will remain nameless. You ask, why no seagulls? Simply the term is not used in the scientific community. There are seabirds and of this general group there are well over 100 species of gulls. Some gulls are found well inland. Some species of land-based gulls have become popularized due to their opportunistic feeding around humans. Many of the pelagic gulls I have seen this trip are not as well trained as the ones in NYC and stick to wild foods, not even accepting the occasional fish scraps I have tempted them with off the back deck. I had reported in a previous log seeing Kittiwake's and some immature Herring Gulls. Today we saw a Slaty-back Gull. It is a handsome gull with striking contrasts of black, dark grey and white. They seem to turn up more each time we reach the northern end of a transect line (above 60° latitude). I also learned that the red spot on the beak is a sign of maturity in many adult gulls. I have a renewed appreciation for gulls and look forward to identifying the species back home.



**Black-Legged Kittiwake**



**Slaty-Back Gull**

*(Gull Images taken on the OSCAR DYSON, courtesy of Tamara K. Mills, U.S. Fish and Wildlife Service)*

### **Personal Log:**

We are approaching the northwestern edge of our transect field and the water is deeper and colder and we are finding less fish. I am lucky to find more time to spend on the bridge and witness the communication with Russian fishing vessels, jumping salmon and occasional marine mammal sightings. I have a little camera envy. Some of the folks aboard have the right lens and the right camera to catch the action out at sea. My little 4X zoom digital is looking mighty bleak on the deck and thus I need to rely on the serious photographers for images of some of these exciting finds; their generosity in sharing their images is most appreciated.

### **Question of the Day**

**Today's question:** How does one become a Golden Dragon?

**Previous Question:** *Why do pollock rise in the water column at night?*

Much of the food eaten by pollock fluctuates in their vertical migration depending on light penetration. During the daylight hours many of the euphausiids (krill) can be found lower in the water column. It seems that by staying lower in the darker portions of the water column during the day, zooplankton may be more protected from their major predators. Near the surface, the phytoplankton (algae) uses the sun's energy to produce food all day. As the light fades the zooplankton rise, feeding on algae, and the pollock follow their food source.



Krill from one of our nighttime raids with the Methot Trawl



Krill (pollock food): Partially digested from inside the stomach of a pollock



Pollock gill rakers screen food from leaving the oral cavity as the water passes out of the gill slits, oxygenating the gills