



**NOAA Teacher at Sea
Rebecca Himschoot
Onboard NOAA Ship OSCAR DYSON
June 21 – July 10, 2007**

**NOAA Teacher at Sea: Rebecca Himschoot
NOAA ship OSCAR DYSON
Mission: Summer Pollock Survey
Day 6: June 26, 2007**

Weather Data from Bridge

Visibility: .5 nm (nautical miles)
Wind direction: 80° (ENE)
Wind speed: 10 knots
Sea wave height: 1 foot
Swell wave height: 1 feet
Seawater temperature: 4.4°C
Sea level pressure: 1018.8 mb (millibars)
Cloud cover: stratus

Science and Technology Logs

Data buoy retrieval and replacement

Luckily we had calm weather today to retrieve two data buoys that were deployed in 2006, and replace them. These buoys contained an Acoustic Doppler Current Profiler, a marine mammal voice recorder, and sensors for other data such as water



Scientist Bill Floering with some of the new sensors deployed today from the OSCAR DYSON.

temperature, nitrates, and salinity. Because the sensors are on a stationary buoy, the information is collected at depth (much of this same information is collected on board the OSCAR DYSON continuously, but at the surface), and over a long period of time.



Deck crew of the OSCAR DYSON retrieving sensors from a buoy.

Life Cycle of the Walleye Pollock *Theragra chalcogramma*
(Interview with Dr. Mikhail Stepanenko, scientist from TINRO)

Dr. Mikhail Stepanenko is assisting in the summer pollock survey from his home institution, the Pacific Research Fisheries Center (TINRO), which is located in



Dr. Mikhail Stepanenko processes walleyed Pollock aboard the OSCAR DYSON.

Vladivostok, Russia. Dr. Stepanenko graduated with a degree in fish biology in 1968, the year before an agreement was signed for scientists in the Soviet Union and the United States to cooperate to help manage international fisheries. Dr. Stepanenko took some time to share what he knows about the life history of the walleye pollock.

According to Dr. Stepanenko, walleye pollock are found throughout the Bering Sea, and south into the Gulf of Alaska. Their range extends as far west as Russian and Japanese waters, and east to the Eastern Aleutians. These fish can live up to 25 years, however the average age of a walleye pollock is 10-12 years. Pollock are related to the cod family.

Pollock begin spawning around age 4, although the most productive spawning years for both males and females is between 5-8 years of age.

Dr. Stepanenko has observed pollock spawning

in an aquarium setting. The male will swim next to a female to show his interest. If she is also interested in that male, the female will swim next to him with sudden, short bursts of speed for several hours before they spawn. If she is not interested, she will continue to swim normally until the male gets the message.

Mature pollock spawn annually in nearshore areas, mostly in the Bering Sea and Gulf of Alaska (98% of pollock spawn in US coastal waters). Although the females will spawn only once annually and then move to the edge of the spawning area to feed, the males will spawn 4-5 times during the annual spawning season.



Thomas Wenneck (c) 2000-2005

Walleye pollock image from the Internet

The eggs will hatch about 25 days later, or longer if the water temperatures are colder. The annual survival rate of the eggs and larvae is highly dependent on the sea conditions and salinity. At the correct salinity, the eggs sink and then are suspended at a certain depth due to a thermocline at that depth. Poor sea

conditions or a dramatic shift in salinity can result in higher mortality for the eggs or the larvae. They must also survive predators such as jellyfish and other small fish.

Directly after hatching the pollock larvae have enough yolk reserve to survive a few days, but they must find food within the first three days of hatching if they are to survive. The larvae are approximately 3.5 mm long when they hatch, and with enough food will grow several centimeters in the first year of life. Only two of the 30-40 types of plankton in the Bering Sea are small enough to serve as prey for these tiny fish. Harsh sea conditions, salinity changes, and scarce food resources in the first year contribute to a survival rate of only about .1% of pollock eggs.

Adult pollock eat euphausiids, as well as smaller fish such as capelin or smelt. In times of scarcity, pollock are given to cannibalism.

The international pollock fishery targets four-year-old fish, and the total Bering Sea harvest of pollock is around two million metric tons annually. Pollock is used in frozen seafood products, such as fish sticks, and as a central ingredient in surimi.

Personal Log

We have been in an area where there are very few fish, so much of my time has been spent learning about pollock and the work that is done here on board. The sea has been pretty rough at times, and I have continued to take some seasickness medication. We're getting back into places with fish, so soon we'll be collecting more data.

Question of the Day

Answer to the last question about the controlled variables in the summer pollock survey: (The scientific method includes controlling the variables in an experiment. What are some examples of variables the science team from the AFSC is controlling in the summer pollock survey?)

One example is the calibration of the acoustic equipment at the beginning of each leg of the survey. Another example is that the OSCAR DYSON cruises the same area of the Bering Sea during each summer pollock survey on transects of the same basic lengths and directions. The survey is conducted at the same time every year, as well.

Today's question: Scientists use Latin names for each animal or plant they find, even though Latin is no longer a living language. How do scientific (Latin) names get selected and why are they important?