



**NOAA Teacher at Sea**  
**Rebecca Bell**  
**Onboard NOAA Ship DELAWARE II**  
**August 13 – 28, 2008**

**NOAA Teacher at Sea: Rebecca Bell**  
NOAA Ship DELAWARE II  
Mission: Ecosystems Monitoring Survey  
Geographical area of cruise: North Atlantic  
Date: August 19, 2008

**Weather Data from the Bridge**

Latitude: 4000.7 N  
Longitude: 6931.5  
Sea Surface  
Temperature: 21.2 C  
Depth: 114m

**Science and Technology Log**

We are heading east out to sea, right now at 4005 N latitude, 6942 W longitude. (Pull out those atlases). We will begin a turn north towards Georges Bank.

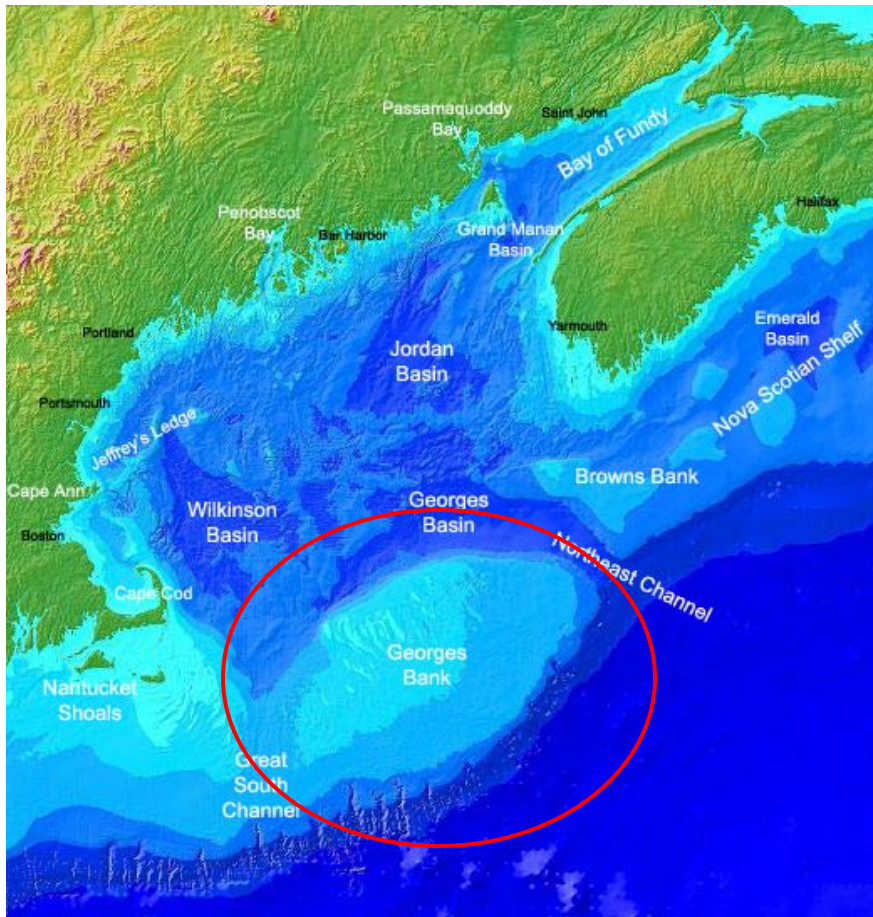
Georges Bank is a large elevated area of the sea floor which separates the Gulf of Maine from the Atlantic Ocean and is situated between Cape Cod, Massachusetts and Cape Sable Island, Nova Scotia. (Source: Wikipedia [http://en.wikipedia.org/wiki/Georges\\_Bank](http://en.wikipedia.org/wiki/Georges_Bank)).



The *Delaware's* latest cruise track has taken it from Woods Hole, MA, south past the Outerbanks of North Carolina, and then north again toward Georges Bank (Image from NOAA's Shiptracker <http://shiptracker.noaa.gov/>).

Georges Bank is (was) one of the most productive North Atlantic fisheries (Grand Banks being the most productive). "Legend has it that the first European sailors found cod so abundant that

they could be scooped out of the water in baskets. Until the last decades of this century these



banks were one of the world's richest fishing grounds... (Source: AMNH web site below).

Northeastern fishery landings are valued at approximately \$800 million dockside, of which a large proportion is produced on Georges Bank. Recently, scientists of the U.S. Geological Survey (USGS) and NOAA's National Marine Fisheries Service (NMFS) have undertaken an effort to document direct interactions between physical environmental factors and the abundance and distribution of fishery species. (Source: USGS below).

**This map shows the location of Georges Bank and the underwater topography.**

This means that the water chemistry, temperature and other factors affect how many fish there are,

how many kinds of fish there are, and where they are. The article from USGS explains that the sea floor sediments that form Georges Bank came from the time when glaciers scoured the area. Since that time, sea level has risen, covering the glacial sediments, and tides and currents are eroding the bottom. When this erosion happens, small sediment particles are winnowed out by tides and currents leaving larger gravel-sized sediments on the floor. This kind of surface is good for scallop larvae and other small animals so they can settle on the bottom and not get buried by sand. Thus, the type of sediment on the ocean floor helps determine what kinds of animals can live there.

Interestingly enough, politics and international relations have affected our trip to Georges Bank. We have been waiting for clearance through the U.S. State Department working with the Canadian government, to get permission to go into Canadian waters. As Wikipedia explains below, part of Georges Bank is "owned" by the U.S. and part is "owned" by Canada. Our route is to take us through the eastern part of Georges Bank, the part owned by Canada. Unfortunately, due to the speed of processing the request, we just this morning found out we got clearance to go

there. If the request had been denied, we would have had to sail around the Exclusive Economic Zone (EEZ) to avoid Canadian waters. Fortunately, we are now good to go.

*From Wikipedia:*

“During the 1960s and 1970s, oil exploration companies determined that the seafloor beneath Georges Bank possesses untold petroleum reserves. However, both Canada and the United States agreed to a moratorium on exploration and production activities in lieu of conservation of its waters for the fisheries.



This map shows the continental U.S. Exclusive Economic Zones (EEZs).

The decision by Canada and the United States to declare an Exclusive Economic Zone (EEZ)

of 200 nautical miles (370 km) in the late 1970s led to overlapping EEZ claims on Georges Bank and resulted in quickly deteriorating relations between fishermen from both countries who claimed the fishery resources for each respective nation. In recognition of the controversy, both nations agreed in 1979 to refer the question of maritime boundary delimitation to the International Court of Justice at The Hague in The Netherlands. Following five years of hearings and consultation, the IJC delivered its decision in 1984, which split the maritime boundary in the Gulf of Maine between both nations out to the 200 NM limit, giving the bulk of Georges Bank to the United States. Canada's portion of the Gulf of Maine now includes the easternmost portion of Georges Bank.” (Retrieved from [http://en.wikipedia.org/wiki/Georges\\_Bank](http://en.wikipedia.org/wiki/Georges_Bank))

For video, more information and a discussion of the depletion of the fish population on Georges Bank see the references below:

Wikipedia [http://en.wikipedia.org/wiki/Georges\\_Bank](http://en.wikipedia.org/wiki/Georges_Bank) (easy to read)

American Museum of Natural History

<http://www.amnh.org/sciencebulletins/biobulletin/biobulletin/story1208.html> (easy to medium to read)

USGS <http://pubs.usgs.gov/fs/georges-bank/> (more difficult to read)

The map above is also from the USGS website.

### Personal Log

It's been a very quiet day today. We had several station samples this morning. At the first one, around 6:30 a.m. one of the crew members spotted two whales. They were too far away to see what kind they were. I, unfortunately, was inside the ship at that time and missed it. However, we are heading north so maybe we will have a chance to see some.