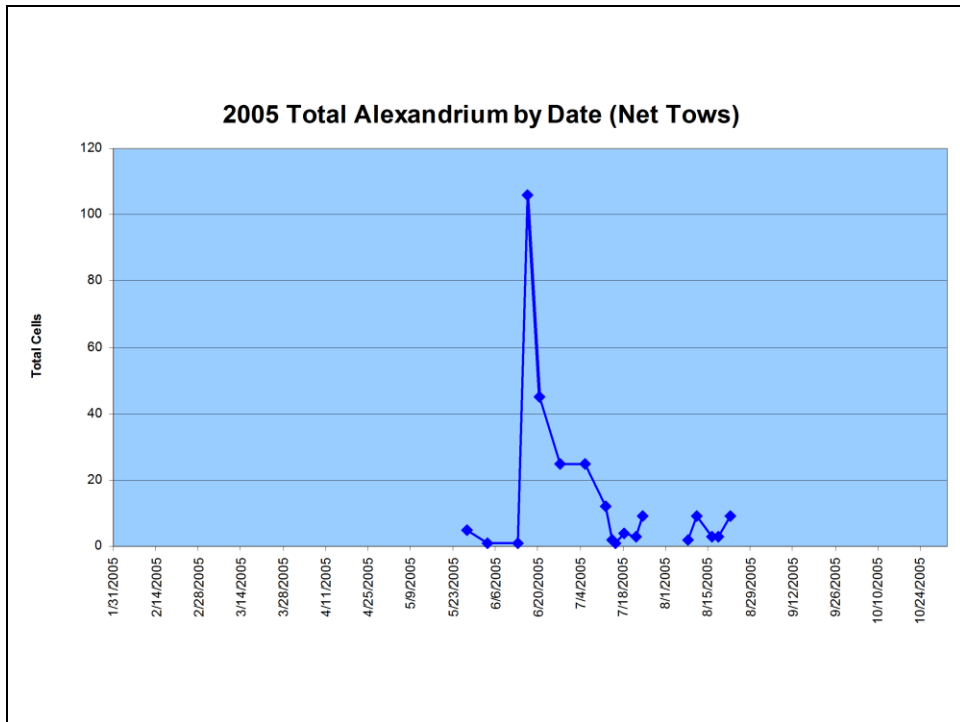
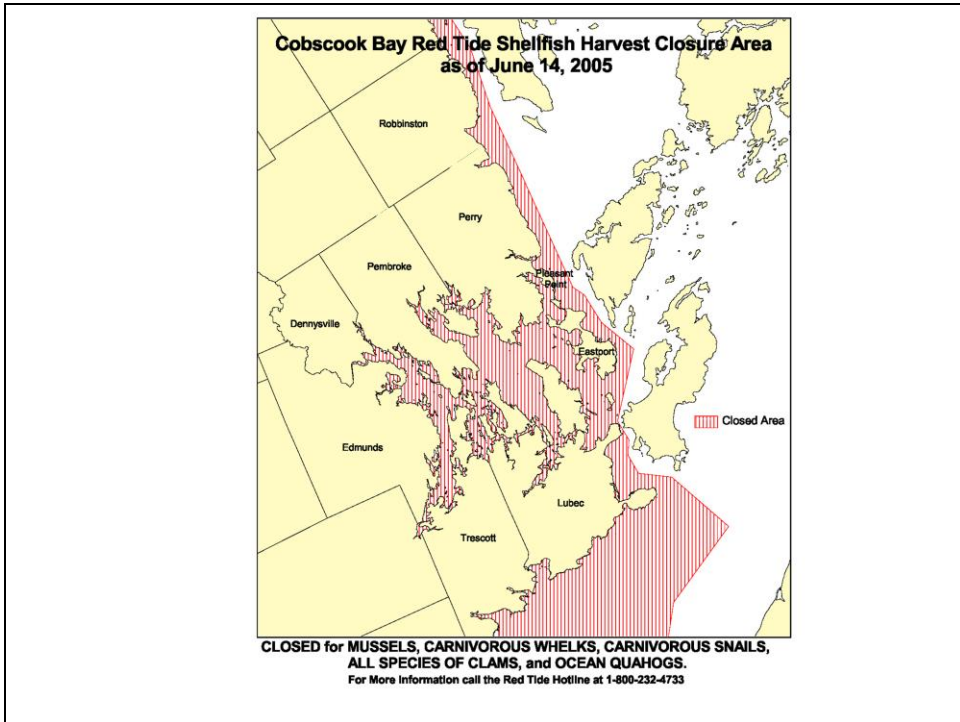


Red Tide and Phytoplankton Blooms

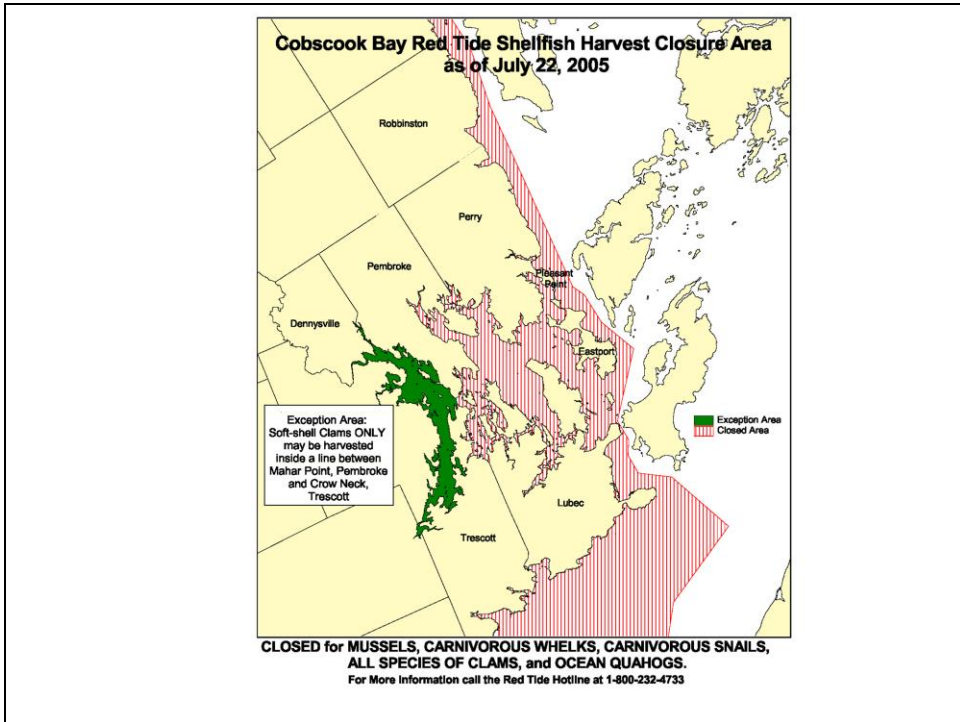
2006 Cobscook Fisheries Forum



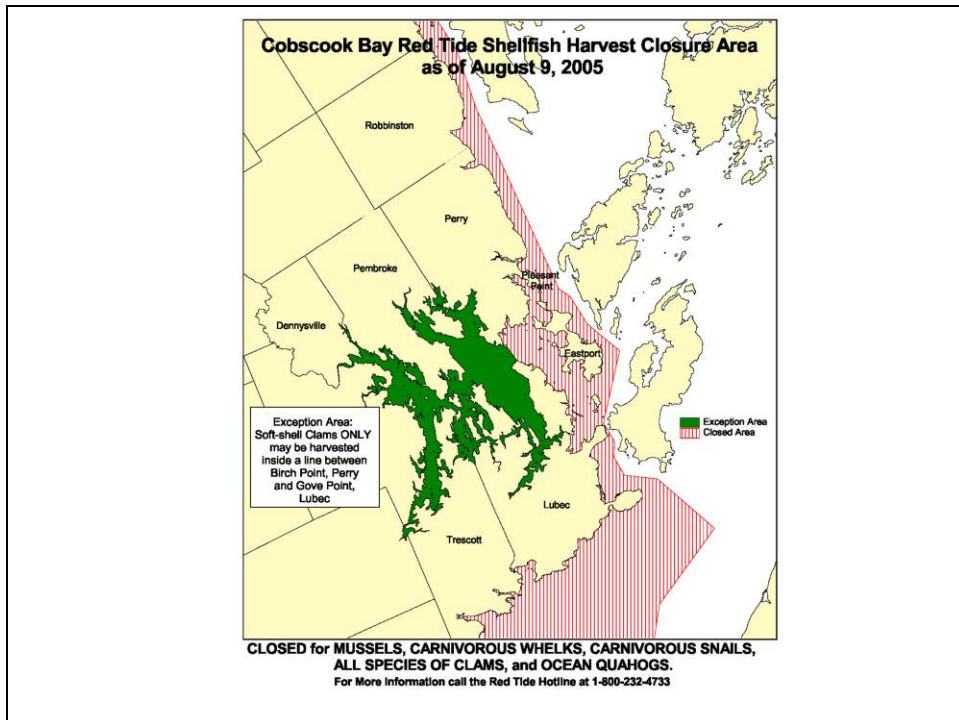
The State of Maine was hard hit in 2005 by Red Tide Closures. This graph shows numbers of *Alexandrium* we observed in our water samples over the entire 2005 sample season. In the Cobscook area, we began to see the red tide phytoplankton *Alexandrium* in late May. Numbers of *Alexandrium* in the water peaked in mid June.



On June 14th the state enacted a red tide closure which covered the area from Moose Cove, Trescott to the Canadian border. Included in the list of species prohibited for harvest were soft-shell clams, mussels, carnivorous whelks, and carnivorous snails. This closure lasted until July 22.



Only July 22nd, the state reduced the closure to allow clam harvesting inside the Bay, above Reversing Falls. This meant that clams could be harvested in parts of Trescott, Edmunds, and Pembroke.



On August 9th, the closure was reduced even further, allowing for the harvest of clams inside a line between Gove Point, Lubec and Birch Point, Perry. Areas included in the opening were parts of Lubec, Trescott, Edmunds, Pembroke and Perry.

All of Cobscook Bay was reopened to clam harvest on August 22. In all, 69 days of harvest time had been lost to Red Tide, 75% of the summer months from June – August.

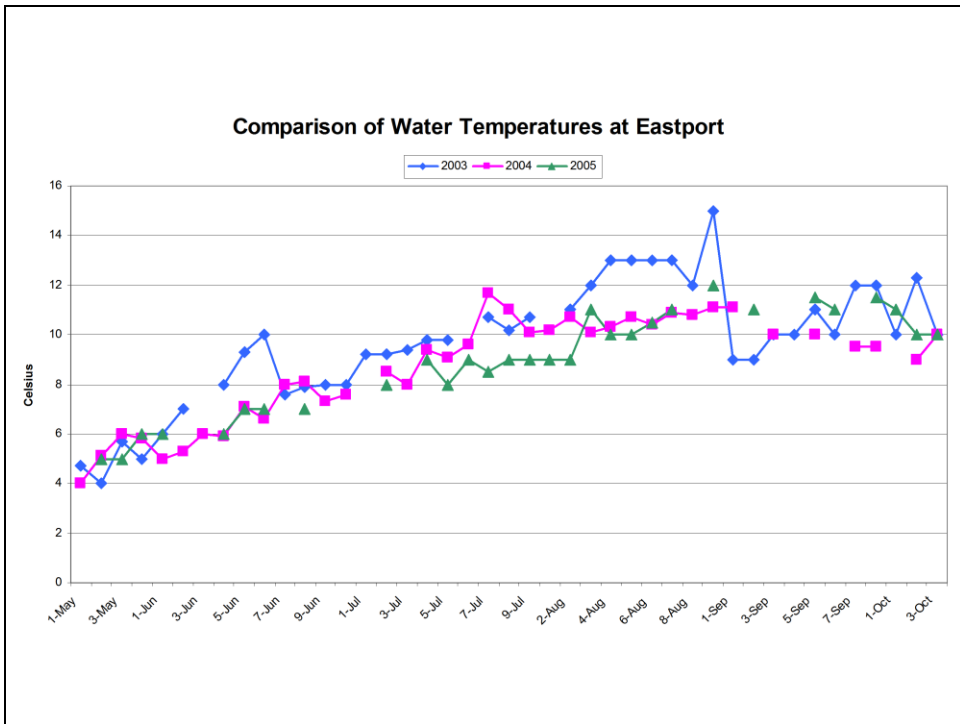
Why have Red Tides
been so bad the last
few years?

Why have Red Tides been so bad the last few years?

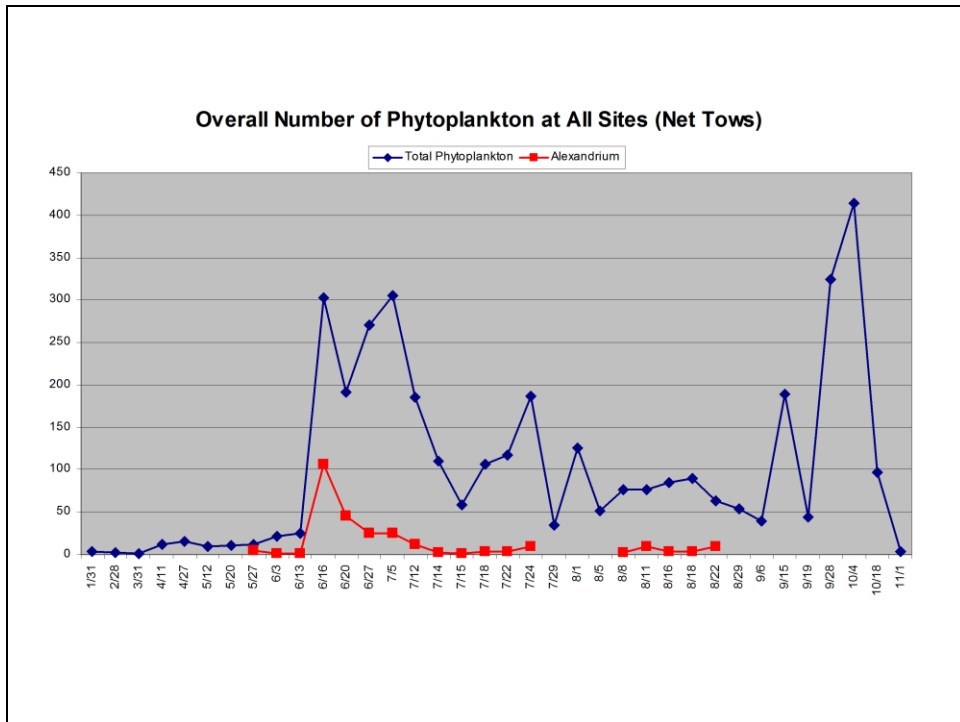
- Bad spring storms bring *Alexandrium* in from offshore
- Cysts are left over in the inshore areas from last fall's blooms
- More freshwater has been entering the Gulf of Maine in the past two years than in the ten previous years

Generally large widespread blooms of *Alexandrium* form in offshore areas in the Bay of Fundy and Gulf of Maine. In the 2005 the factors listed here probably contributed to the large red tide we experienced.

Source: Woods Hole Oceanographic Institute
<<http://www.whoi.edu/sbl/liteSite.do?litesiteid=3230&articleId=5019>>



Locally, water temperatures in 2005 were much lower through the spring and early summer than they had been in previous years. This graph shows temperatures for Eastport over the past three years. 2005 is in green.



This graph shows the number of *Alexandrium* (in red) we observed over 2005 against the total number of phytoplankton observed. Warm temperatures and sunlight are needed for other phytoplankton species to grow. In the spring last year, we had cold temperatures and lots of rain...not much opportunity for phytoplankton to grow. In addition to these factors, *Alexandrium* is not a good competitor so it is more plentiful when there are fewer species of phytoplankton in the water.

Does Red Tide affect shellfish?



Photo from NOAA/Sandy Shumway

If there are lots of toxic phytoplankton like *Alexandrium*, clams can become lethargic or unable to retract their siphon.

So...does red tide affect shellfish? Filter feeding shellfish like clams, mussels, and scallops accumulate phytoplankton toxins as they feed.

Up until several years ago, we were told that humans were affected by red tide but the shellfish themselves were not.

However, Laurie Connell, a researcher at UMO, is part of a group of scientists that have found that clams can suffer many of the same symptoms as humans do. Some clams can become lethargic or lie in the mud with their necks hanging out if there are lots of toxic phytoplankton around. Other clams become resistant to red tide toxins. These clams come from areas that have historically had a lot of red tide blooms. Because of their resistance, they are less affected physically from red tide toxins and can feed longer. They may accumulate greater levels of the red tide toxins because of this, take longer to flush toxins out after the bloom is over, and therefore be unfit for human consumption for a longer period of time.

Bottom Line

2005

69 days lost to Red Tide Closures

50 days lost to Flood Closures

2004

77 days lost to Red Tide Closures

20 days lost to Flood Closures

Red tide blooms not only affect clams and clammers.... They also affect shellfish dealers, restaurant owners, oyster growers, mussel harvesters, quahog draggers, salmon farmers, and all the other people and businesses in the coastal communities where blooms and closures occur.