The History of Oyster Harvest

Overview:
This activity will familiarize students with the history of oyster harvest and the factors that have led to their decline. Teachers can either use the graphs provided or have student use the provided data to graph the data in a spreadsheet.

Materials:
- Excel file with historic data (provided)

Background:
Oysters have been harvested well before recorded history. Records of catch were not kept until the end of the 19th century and accurate catch data was not recorded until the 1950’s. Factors other than overharvest have led to the decline of oyster populations including disease, loss of habitat, storms, and reduced water quality. This activity will give students an understanding of changes in oyster harvest resulting from the different causes that have lead to a drastic reduction in oyster populations. Please refer to background Power Point presentation for a more detailed background.

Activity:
1) Make two separate scatter plot graphs in Excel using the NOAA catch data from 1950-2008. The first graph should have year on the x-axis and pounds on the y-axis. Plot the total US, Atlantic, Gulf of Mexico, and North Carolina catch for all years. On the second graph plot the total amount of money of the catches for the same variables. Answer questions 1-5.

2) Make another scatter plot using the N.C. historic data below. The graph should have 3 lines, pounds of meat harvested, bushels harvested, and the amount of money the oysters were worth. Answer question 6.

3) Choose 5 events from the list below and label your graph. Answer the rest of the questions.
NC historic events affecting oyster harvest

The following is a list of important dates for oyster populations in Pamlico Sound (information form NC DMF fisheries management plan for oysters, 2001)

1893 - An economic depression severely reduced the market for oysters.

1899 - Hurricanes in August and October killed many oysters due to excessive rainfall.

1917-18 - A severe December and January freeze curtailed harvest; manpower was lost due to World War I.

1924 - A typhoid outbreak was traced to east coast oysters reducing markets. The Shellfish Sanitation Program began, and polluted areas were closed to harvest.

1929 - The Great Depression caused oyster markets to fall off dramatically.

1933 - The 1933 storm destroyed oyster beds around Ocracoke and Portsmouth which had been the most productive in the state since the mid 1800s.

1940 - An unexplained heavy mortality of oysters was reported.

1942-46 - Production increased due to high prices caused by World War II.

1949 - Heavy rains in June, 1949 caused severe oyster mortalities in Hyde and Dare counties which affected landings through 1951.

1953-55 - Oyster resources were damaged due to hurricanes Hazel, Connie, Diane, and Ione.

1972 - Hurricane Ginger caused an estimated 33% mortality of oysters in Pamlico Sound.

1976-77 - A severe freeze curtailed the winter oyster harvest.

1987-88 - Oyster harvest from Core Sound south to the South Carolina border was severely curtailed due to a red tide outbreak.

1988-98 - Significant oyster mortalities were found to be caused by the oyster parasite Perkinsus marinus (Dermo).

In contrast, some efforts to rehabilitate the oyster fishery were cited for large increases in landings:

1921-24 - Approximately 1.5 million bushels of seed oysters and shells were planted and given credit for the great increase in landings around 1923.

1934 - Plantings of 825,000 bushels of seed and 78,567 bushels of shell in 1934 were closed until 1936, when landings rose to around 800,000 bushels.
Questions:

1) What is the overall trend in the catches for the 4 regions graphed over the past 50 years? What is the overall trend for the amount of money for the harvested oysters?

2) What are three reasons for the overall downward trend in catches in the US?

3) Why has the Atlantic catch decreased while the catch in the Gulf of Mexico increased?

4) How has the overall catch decreased but the price of all of the harvested oysters increased?

5) Since 1950 there have been many advances in technology, including more powerful boats, more efficient dredges, and GPS. Should these technologies have increased or decreased catch? How could this have exacerbated the overharvest of oysters?

6) Pick one trough and one peak in the past 130 years in NC harvest and give an explanation on what might have happened to cause it.

7) What are 4 major drivers that alter oyster harvest?

8) Which causes (natural or manmade) have had the greatest effect on oyster harvest?

9) Assuming that bushels of live oysters and shell are relatively equal, determine the percent of harvested shell in 2004 that was returned to North Carolina waters that same year.

10) Compare the amount of oysters harvested to the amount of shell returned to the water in your area in 1999. Is it greater or less than the state average in 2004?

Further Information:

North Carolina Division of Marine resources annual landings for all species in North Carolina http://www.ncfisheries.net/statistics/index.htm
National Marine fisheries annual landings query for all species http://www.st.nmfs.noaa.gov/st1/commercial/landings/annual_landings.html

The North Carolina National Estuarine Research Reserve is a cooperative program between the North Carolina Department of Environment and Natural Resources, Division of Coastal Management and the National Oceanic and Atmospheric Administration.