Where Are the Black Sea Bass?

Below is an adaptation of the Where Have All the Salmon Gone? (Council for Environmental Education: ProjectWet 2005) lesson plan to be about Black Sea Bass and to incorporate information learned from Dr. Jensen's presentation and subsequent discussion.

Lesson Overview

Students will (1) interpret and make inferences about fluctuations in fish populations from actual data, and (2) analyze the effects of human use and fisheries management on a fish population.

Lesson Rationale

Students graph and interpret actual fish population data in relation to historical events.

Materials

- Graph paper
- Copies of Fish Caught Worksheet
- Chart and historical data on fish caught in the Mid-Atlantic region

Overview

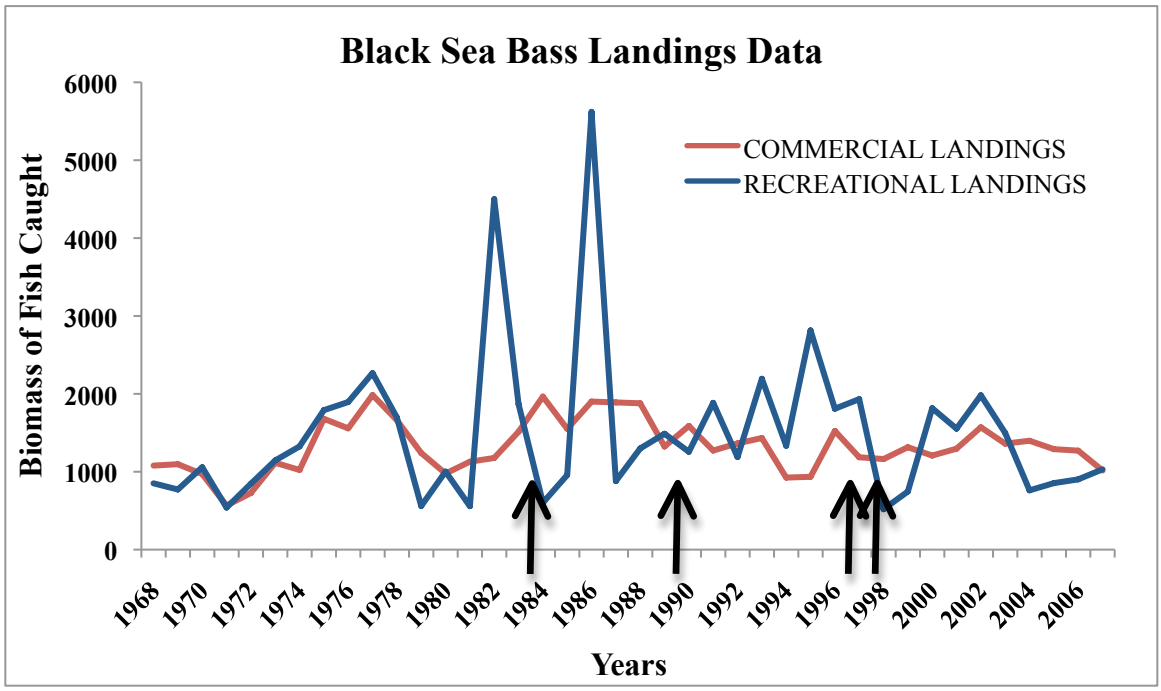
Research data gathered about a wildlife population in a similar manner over a period of time may be useful in detecting trends in that population. The data may be analyzed in a variety of ways. Because a fish population is influences by many factors, it may be difficult to measure the effect of a single factor. Thus, assumptions must often be made that factors other than the ones being measured are not significantly affecting the population.

Usually, only a sample of the population can be obtained, and inferences about the total population must be made from this sample. Errors or inconsistencies in gathering the data over time may greatly influence the accuracy of the data. Despite the influence of unknown factors and possible inconsistencies in data gathering, regularly conducted counts or inventories of a population may still be the best information available, and decisions must be made from this information.

In this activity, actual data from fish catches from the recreational and commercial fisheries of Black Sea Bass in the Mid-Atlantic region are provided to students to analyze. The data are in metric tons of fish caught in the ocean.

Procedure

1. Provide students with the Fish Catch & Historical Data Worksheet and have the students graph the recreational and commercial landings data on their graph paper.
2. What inferences can the students draw from the data provided? Do the graphs show any long-term trends? Are there periods in which the rates of fish caught change rapidly in a short time? What inferences about population abundance can be made from the graphs? What other factors may be affecting the number of fish caught of the population levels? Might the ways in which the fish are caught have changed over time? A new event or factor may take some time to have an effect on a population or to be detected. Do the graphs seem to show any of these situations in relation to a possible historical event? Are there different interpretations that individual students make from the same information? Does each of the interpretations seem to explain or fit the information and data? If faced with making a management decision on the basis of one interpretation, how would the students decide which interpretation to use?
3. Provide the students with the Historical Data on the worksheet. Have them review this new information in relation to what their graphs show. Integrate the actual data with the historical information by making notes on the graphs at the points where significant historical events occurred. What new inferences can be made? Must come of the old inferences or explanations by changed to fit the new data?



Fish Catch & Historical Data Worksheet

The data below are taken from actual fish catches in the commercial and recreational fisheries for Black Sea Bass in the Atlantic Ocean. The accompanying Historical Data provide an overview of human activity in the ocean, plus developing regulatory and management efforts over time.

YEAR	COMMERCIAL LANDINGS	RECREATIONAL LANDINGS
1968	1079	851
1969	1097	772
1970	970	1058
1971	566	540
1972	727	846
1973	1115	1145
1974	1023	1325
1975	1680	1791
1976	1557	1895
1977	1985	2267
1978	1662	1697
1979	1241	560
1980	977	1002
1981	1129	558
1982	1177	4500
1983	1513	1869
1984	1965	602
1985	1551	958
1986	1901	5621
1987	1890	880
1988	1879	1299
1989	1324	1488
1990	1588	1256
1991	1272	1885
1992	1364	1188
1993	1433	2194
1994	925	1333
1995	935	2815
1996	1524	1809
1997	1186	1932
1998	1163	519
1999	1315	746
2000	1208	1816
2001	1296	1553
2002	1571	1982
2003	1361	1498
2004	1398	761
2005	1290	854
2006	1271	902
2007	1016	1031

Historical Data on Black Sea Bass Worksheet

Year	Action
1983	First Fishery Management Plan created which establishes the minimum size as 8 inches and that the mesh size in a net must be at least 4 inches wide
1989	Trawl nets are prohibited between North Carolina and Florida
1996	The total amount of Black Sea Bass allowed to be caught in the commercial and recreational fisheries and restrictions on some of the gear
1997	Minimum size is increase to 10 inches for both commercial and recreational fisheries, limits recreational fishermen to only catch 20 fish per day, and requires the pots to have parts that decompose if lost in the ocean (to allow fish to escape)
2009	Mid-Atlantic Black Sea Bass population considered rebuilt